

Response to Referee report 2: “Financial Stress, Regime Switching and Macrodynamics: Theory and Empirics for the US, EU and Non-EU Countries”

March 27, 2014

Response to the Anonymous - Referee Report 2

The referee raises two main issues in the third and the fourth paragraphs of the report.

The first issue is about the difference between the Markov switching models and the MRVAV models.

Response:

To address this issue we have worked out an extended section 6.3 in which we elaborate in detail how these two models differ from each other and how they are in common.

We argue there why we choose MRVAR and not Markov switching model.

The second issue is about "The solutions of the model make reference to non-linear model predictive control (NMPC) and a short discussion on the algorithm (hypothesis, pros&cons) can be helpful so to better understand. Furthermore, the authors should address why there is the need to mimic a finite horizon decision making rather than to consider a real finite horizon decision making."

Response: A reference is made in the text where the algorithm is described, see Gruene et al (2013). As to the second part of the question, "mimic" in the sense above means that lets say the prediction and decision horizon is $N=5$, but then implemented is only the first step solution, and then again a prediction/decision horizon of $N=5$ is used.

Further issues raised are

"The model, the regimes and, in general, all results proposed in the paper are originated by the dynamics of aggregate debt. In this respect, a more detailed discussion is required so to better understand the differences between the proposed model formulations. Furthermore, authors should point out"

- the differences between b and b_t , k and k_t and the reason of their specific presence in the equations that describe the dynamics of aggregate debt (i.e., eqs. (3), (6) and (10)), These are the same symbols, just the time index is left aside.

- the reasons of the quadratic assumption for the adjustment cost for investment $\phi(g_t, k_t)$ is that this is standard in investment theory (and technically it avoids a bang-bang solution)

- the reasons to represent the credit spread as an *arctan* function of the debt to capital stock ratio (i.e., eq. (7)) is that 1) the function is bounded below and above (interest rates cannot take on any value) and 2) it gives approximately the same functional form as the logistic function used in STR models by Teraesvirta and others, but is easier to use from the computational perspective.

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Furthermore, authors should check correctness of eqs. (6) and (7), whose combination yields a β^2 coefficient

Correction: its only the beta that appears there: so

$$r(b_t/k_t) = \arctan(b_t/k_t).$$