

Risk-to-Buffer: Setting Cyclical and Structural Capital Buffers through Banks Stress tests

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What the paper does

- Aim is to jointly calibrate cyclical and structural buffers through the use of stress tests (risk-to-buffer).
- Process:
 1. Use a non-linear model (Multivariate Smooth Transition regime switching model via local projections) to generate adverse scenarios whose severity depends on the risk level.
 2. Two levels of risk (via the state variable): a “reference” scenario with a predetermined level of risk, and a “cyclical” based on the current risk level.
 3. A stress test model is used to project bank losses based on each risk level.
 4. Structural buffer is based on the losses from the reference scenario, while the cyclical one is based on the extra losses based on the current risk level.

In detail:

- Main assumption is that, buffers are a function of CET, which is a function of the macro scenario, which is a function of the shocks:

$$Buffers_t = h \circ g \circ f(Shocks_t)$$

- Buffers are also similarly estimated:

$$Buffers_t^{Structural} = h \circ g \circ f(Shocks_t, Reference Risk)$$

$$Buffers_t^{Cyclical} = \max \left(h \circ g \circ f(Shocks_t, Current Risk) - h \circ g \circ f(Shocks_t, Reference Risk), 0 \right)$$

Estimation

- Smooth transition regime switching model with two regimes.
- Basically a VAR model that has different coefficients depending on whether we are in the high or low regime.
- Depends on the state effect, $F(z_t)$, which is transformed using a logit function. Won't go into too much details.
- Standard VAR identification methods are used.
- Variables used: GDP, HICP, Unemployment, Euribor 3m, real House Prices, bond spreads.
- State variable – $F(z_t)$: Credit-over-GDP ratio of Non-Financial Private Sector (3y difference)

Estimation (2)

- Estimate the threshold VAR, create shocks on the basis of assumptions, then impose those assumptions on the VAR IRFs to obtain the impact.
- Simplified relationship between CET1 change and GDP change (regression).
- Calibration: structural risk=median risk / structural risk=minimum risk.

Issues for discussion

1. Why is a 3-year difference for the state variable used?
2. Ordering: *“The short term rate is ordered after the unemployment rate, in order for monetary policy to react to Output, Inflation and Unemployment Rate. This ordering is consistent with financial variables reacting faster than macroeconomic ones”*. Isn't this precisely the opposite?
3. Basically, for the estimation of the shocks, you impose the assumptions (i.e. 4 StDevs + spread increase of 100bps) on the IRFs? Are they overlapping to an extent?
4. It would be useful to see the $F(z_t)$ at 0.25 and 0.75 as well, in order to assess any potential differences.

Issues for discussion (2)

4. Unclear how we move from the micro to the macro level. For example we have $CET_{i,t}$ but then we move to CET_t for the estimation. There is no equation in the Appendix.
5. Structural vs cyclical buffers: perhaps the trade-offs between the two should be explained in order to better understand the need to differentiate between them.
6. Cyclical Amplifier is highly interesting, but what about a real time exercise? What would the buffer suggest in the case of a house price decline such as over the 2008-2013 period?