

Systemic Financial Instability versus Financial Business Cycles in Empirical Macroeconomics

Discussion

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Outline

Three papers

- 1 Hartmann-Hubrich-Kremer-Tetlow, “Melting Down: Systemic Financial Instability and the Macroeconomy”
- 2 Alessandri-Mumtaz, “Financial conditions and density forecasts for US output and inflation”
- 3 Gilchrist-Mojon, “Credit Risk in the Euro Area”

One discussant...

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- 1 Hartmann-Hubrich-Kremer-Tetlow, “Melting Down: Systemic Financial Instability and the Macroeconomy”
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- 3 Gilchrist-Mojon, “Credit Risk in the Euro Area”

One discussant...

Some common themes ...

- Examine or construct a specific financial stress indicator.
- Use it in (FA)VARs, possibly with regime-switching.
- Find that the stress indicator ...
 - ▶ helps with forecasting.
 - ▶ helps with identifying financial-stress-regimes.
 - ▶ has shocks (“ordered last”) which have powerful effects on the economy, possibly restricting to stress-episodes.
- Generally, episodes of financial stress can be identified and are times, in which financial stress shocks have strong effects on the economy.

... and some more common themes ...

- Lots of hard work.
- Lots of details.
- The papers **want** answers!
- We “know” (do we?) that financial frictions matter and that “financial recessions” occurred: so surely, one can empirically figure out what is going on during these episodes.
- Lots of colorful names and interpretations get attached to empirical results.
- For my taste: a bit too much advertising of perhaps-less-compelling results, and a bit too much “ECB/financial crisis”-speak.
- Bayesians have won.

... and a common, remaining challenge

- Challenge: could we have seen the crisis coming? Will these methods see the next crisis coming?
- These papers should clear this up.
 - ▶ Financial stress indicators: constructed “after the fact”. By themselves, they start “blinking” in late 2007 — otherwise, they would not have been proposed in the first place or used in this paper. Should we be surprised?
 - ▶ Does adding the financial stress indicator to the VARs really help? Comparison to a VAR with 3 or 5 variables (rather than large-scale VAR/FaVAR model) “too easy”?
 - ▶ Do the VAR analyses help in “seeing the crisis coming” **above and beyond** staring at the crisis indicator, and in real time?
 - ★ Obviously, the “real time” probability of a crisis was low in, say, 1997.
 - ★ Show convincingly, that your analysis would have seen the world wide financial crisis coming by 2006 or the Eurozone crisis coming, by 2009, in a real-time data analysis!
 - ★ Perhaps that’s not possible. But then, tone it down a notch or two.

Hartmann-Hubrich-Kremer-Tetlow 1

- Quite a bit on selling the Hollo-Kremer-Lo Duca “CISS” (Composite Indicator of Systemic Stress) indicator. Comment:
 - ▶ Is it sensible?
 - ▶ Best defense appears to be: it works.
 - ▶ Paper could just briefly describe it and sell its own contribution.
- Use it inside a Markov-Switching VAR,

$$A_0^{(s_t)} y_t = A_1^{(s_t)} y_{t-1} + \dots + A_3^{(s_t)} y_{t-1} + D^{(s_t)} \epsilon_t, \quad \epsilon_t \sim \mathcal{N}(0, I)$$

where (s_t) indicates the (hidden) Markov state.

- Preferred specification: $s = (v_i, c_j)$, where $i = 1, 2, 3$ counts “variance states, only impacting on $D^{(s)}$ ” and $j = 1, 2$ counts “coefficient states”, only impacting $A_k^{(s)}$.
- Find: large impact of stress indicator shocks in “systemic fragility state”.
- Find: useful for assessing crisis episodes and as early warning tool.

Hartmann-Hubrich-Kremer-Tetlow 2

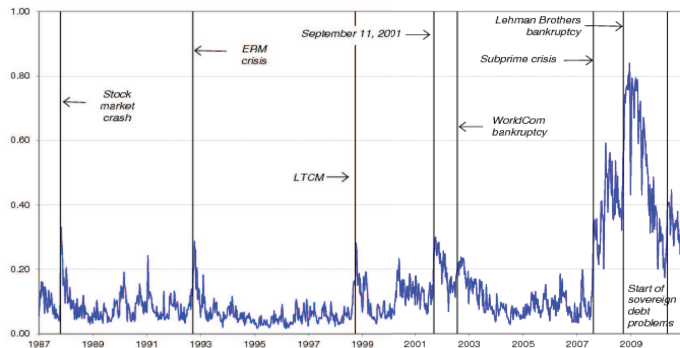


Figure 1: Composite Indicator of Systemic Stress (“CISS”) for the euro area and specific financial stress episodes, January 1987 to December 2010

Note: highly volatile recently

Hartmann-Hubrich-Kremer-Tetlow 3

Table 3: Descriptive statistics, by regime

Line #	Regime	conditional means					sample shares (%)
		ΔIP	ΔP	R	ΔLn	S	
[1]	First regime ($v1, c1$)	0.54	2.26	5.85	5.97	0.071	16.1
[2]	Third regime ($v2, c1$)	2.78	1.96	3.22	6.33	0.081	35.3
[3]	Fifth regime ($v3, c1$)	3.96	2.43	4.18	9.66	0.260	5.2
[4]	Second regime ($v1, c2$)	3.39	3.01	6.13	8.43	0.092	17.8
[5]	Fourth regime ($v2, c2$)	1.16	2.83	5.85	6.11	0.110	18.9
[6]	Sixth regime ($v3, c2$)	-11.3	1.57	2.88	4.66	0.520	6.6

Notes: vi variance regime, $i = 1, 2, 3$. cj coefficient regime, $j = 1, 2$.

Tough to read! Different numbers, labels...

Hartmann-Hubrich-Kremer-Tetlow 4

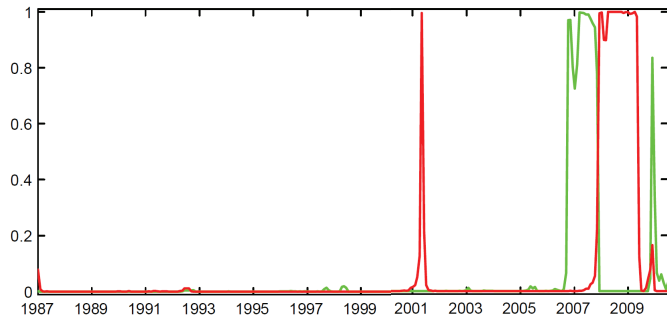
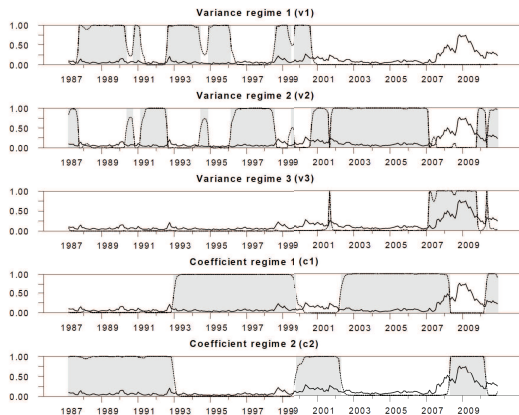


Figure 3: Smoothed probability of the systemic fragility regime (red line) and the financial turmoil regime (green line)

Too little data on key regimes? It is ...

Hartmann-Hubrich-Kremer-Tetlow 5



... patched from two sources of evidence.

Hartmann-Hubrich-Kremer-Tetlow 6

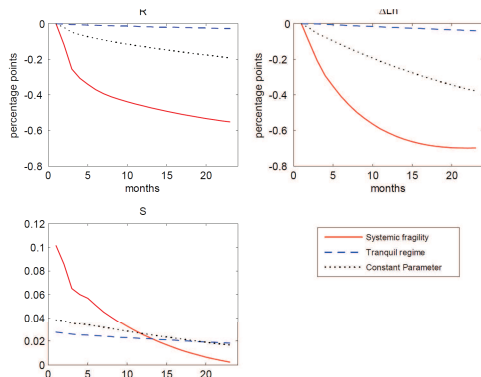


Figure 4: Impulse responses to financial stress shock, one standard deviation shock, comparison constant parameter model and 2 coefficient regime model (3v2c)

No surprise, since variance is now large? Std errors?

Alessandri-Mumtaz 1

- Theoretical exposition, that financial-stress-type models might produce nonlinearities. Comment:
 - ▶ Too long. Wrong model for macro. Unconvincing.
 - ▶ Other cited literature: sure, theorists like to have fun.
 - ▶ We believe you that it could. Show us that it matters!
- For U.S.: financial conditions indicator (fci), extracted as a factor.
- Use it inside a Threshold VAR or TAR,

$$A_0^{(s_t)} y_t = A_1^{(s_t)} y_{t-1} + \dots + A_{12}^{(s_t)} y_{t-1} + D^{(s_t)} \epsilon_t, \quad \epsilon_t \sim \mathcal{N}(0, I)$$

where $s_t \in \{0, 1\}$ (two regimes) is observed,

$$s_t = 1, \text{ if } \text{fci}_{t-d} \leq Z^*$$

- Various real-time-data model selection criteria.
- Find: nonlinearities matter. Predictive densities matter.
- Find: TAR would have predicted high probability of deep recessions, in contrast to simple VAR.
- Not much difference between VAR with fci and TAR?

Alessandri-Mumtaz 2

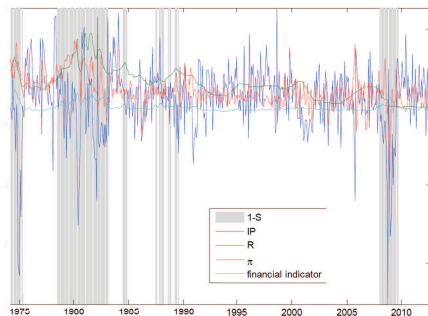
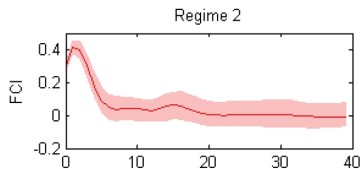
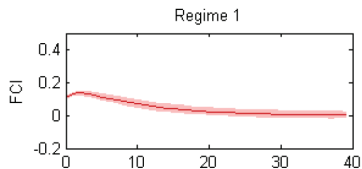
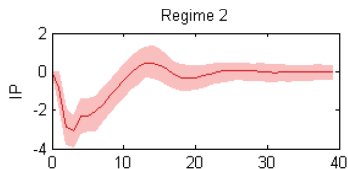
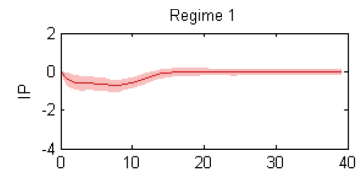


Figure 1: Financial regimes. The data is plotted against the full-sample median estimate of $1 - S_t$, the state variable that drives the regimes in the *TAR* model. Grey bands identify the periods of financial distress ($S_t = 0$, see equation 13).

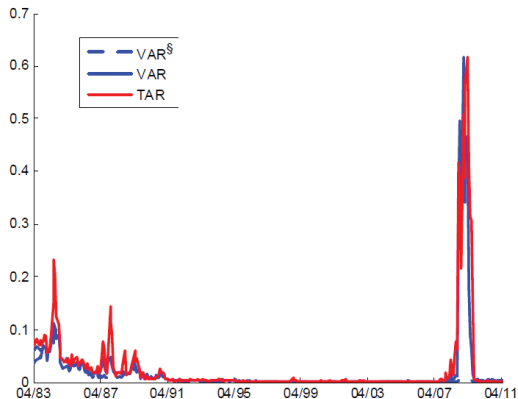
Not a lot of “data” for “stress regime”. 1980 = 2007?

Alessandri-Mumtaz 3



Tight standard errors?! Mean reversion in fci: since episodes were short.

Alessandri-Mumtaz 4



Widened uncertainty gets larger probability for tails. Is that a feature ... or a bug?

Alessandri-Mumtaz 5

- Clean up the technical stuff.
- Conjugate prior? That's a Normal-Wishart for a regular VAR (see my "Econometric Theory" paper 1994, a version is in Leamer ... I don't understand that credit here is given to Banbura et al.)
- It is also a Normal-Wishart for a observed-regime-switching VAR.
- Dummy observations do not generate a conjugate prior, can suitably modify it.
- Gibbs sampling: how? More importantly: why? For a regular VAR, you can integrate directly. For the regime-switching VAR, only "difficult" uncertainty is about Z^* and d : two-dimensional. The rest can be integrated out.
- You never show predictive densities, but you should. I suspect you have too little data during "stress times": thus, the model over-cautiously gets large probabilities for deep recessions.

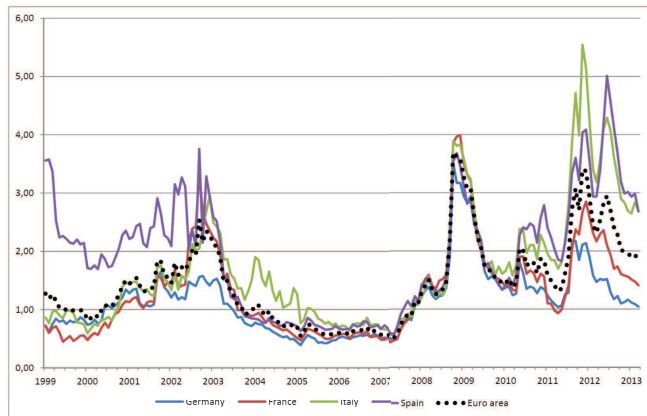
Gilchrist-Mojon 1

- They construct a new credit risk indicator, based on yields of private sector bonds (MFIs / non-MFIs). Comments:
 - ▶ “Gilchrist-Zakrajsek” for EMU.
 - ▶ Data for the rest of us: always cool!
 - ▶ But: do we only get the indicator? Much is about details! Can you publish the underlying data set too? Or a much more detailed break down?
 - ▶ Will it be updated in the future, and supplied by BdF?
 - ▶ Are these bonds traded regularly? Even in crisis times?
- Economic activity regression: credit risk indicator predicts GDP and bank lending. Comment: only few other variables on rhs! Is this a surprise? Perhaps, the indicator is an instrument for something else? This may be **particularly** true, when we examine country-specific regressions.

Gilchrist-Mojon 2

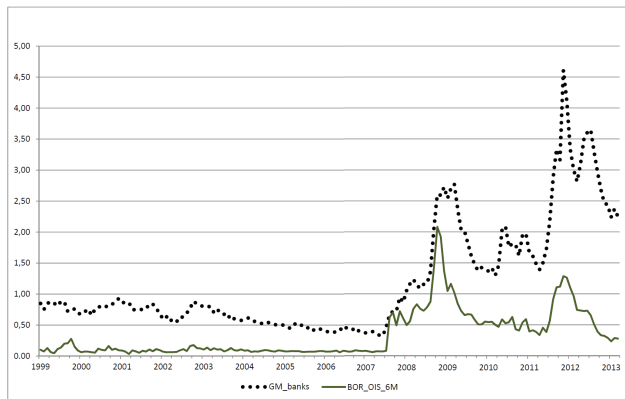
- Comment: causation?!? Could it be, that banks learn that GDP will decline or that country conditions worsen, due to sovereign default fears, and thus restrict lending and raise rates now?
- Run FaVAR: no regime dependence, but “credit risk indicator” on its own and last in Cholesky. Authors find: shocks have significant impact.
- “Uniqueness (= uniformity?) of monetary conditions? ”
ECB-speak! No. If two prices differ, it does not mean that markets are disturbed.

Gilchrist-Mojon 3



Do differences mean “financial stress”?

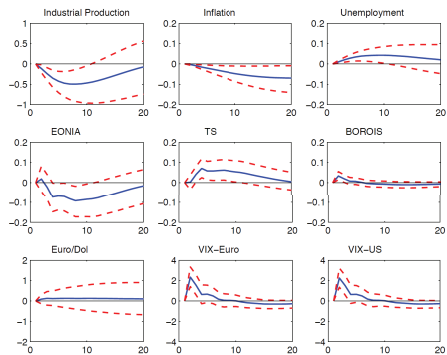
Gilchrist-Mojon 4



Two indicators: differ. Bug or feature?

Gilchrist-Mojon 5

Figure 7: Impulse response: euro area real and financial variables



Conclusions

- Lots of hard work.
- Lots of details.
- Important topic.
- The papers **want** answers!
- They deliver some, but perhaps not as much as they claim.
- That's life. Data isn't as neat as policy makers wish it to be.