Discussion of “Identifying Indicators of Systemic Risk” by Hartwig, Meinerding, Schüler

Andreas Lehnert and Michele Modugno

May 16, 2019

Deutsche Bundesbank

This paper…

- …proposes a **rigorous statistical implementation** of the definition of systemic risk advanced by the FSB/BIS/IMF to G.20 in 2009
- …tests where several popular candidate macro/financial risk indicators satisfy the definition
- …and here are the results…

Candidate macro/financial indicator	Meet implementation?	Interesting result?
Orthodox Basel III credit-to-GDP	**Yes**	**Not really**
Schüler et al Composite financial cycle	**Yes**	**Yes!**
Gilchrist & Zakrajsek GZ?	**No**	No
Chicago Fed NFCI?	**No**	No
Term spread (10yr – 3mon)?	**No**	No

The **rigorous statistical implementation** (in brief)

Use candidate measure x_t to predict crisis:

$$Pr\{Crisis_{t+h}\} = \alpha + \beta x_t \Rightarrow \widehat{P_h(x)}$$

Use predicted crisis probability to predict 5th quantile of GDP growth

$$y_{t+h} = \delta_{quantile} \times \widehat{P_h(x)} + stuff$$

- Does candidate measure x_t predict crises at $t + h$ well?
- Does the fitted crisis probability at $t + h$ predict the downside tail of GDP at $t + h$ well?

Surprises?

- Are we predicting crises? Downside tails?
- Three measures are financial conditions indexes designed to be correlated with good (bad) times today/tomorrow
  - NFCI, GZ, yield curve
  - Not surprised that they (mostly) fail to predict crises *h* periods ahead
  - And then fitted values are noisy and fail to predict 5th quantile
- One measure was specifically designed to capture financial cycle
  - Credit-to-GDP gap
  - Crises? Absolutely. Downside growth tail? Absolutely
- The Schüler et al composite financial cycle is new to me
  - Very interesting

Suggestion 1:
Talk about units, magnitudes, measures

1 year ahead		
Stage 1	Stage 2	
LR-test	linear	5%
✓	**-2.8**	1.6
✓	**-6.1**	**-11.8**
	-106.9	-684.0
✓	-1.7	2.1
	-25.3	-40.1
✓	**-4.3**	**-6.1**
✓	**-5.2**	**-24.0**
	48.8	393.0
	-6.5	-16.1
	-35.2	-80.3

Explain units

What are these magnitudes?

$400 \times (log(y_{t+4}) - log(y_t))$

So expect 2.8 to 6.1 percent contractions?

Maybe use the unemployment rate?

Summary measure of economic stress

Can argue that U.S. central bank targeting

Statistical properties are nicer

Suggestion 2: Show your work

- Never before asked for more charts and tables in a paper…
- Data: Are we dealing with U.S. macro data 1973 – 2015? How many events are in those data? Cross-country evidence irrelevant?
- Fitted crisis probabilities: A measure could do a “good” job of fitting crises but the predicted crisis probabilities could be quite small – especially in U.S. macro data during “great moderation”

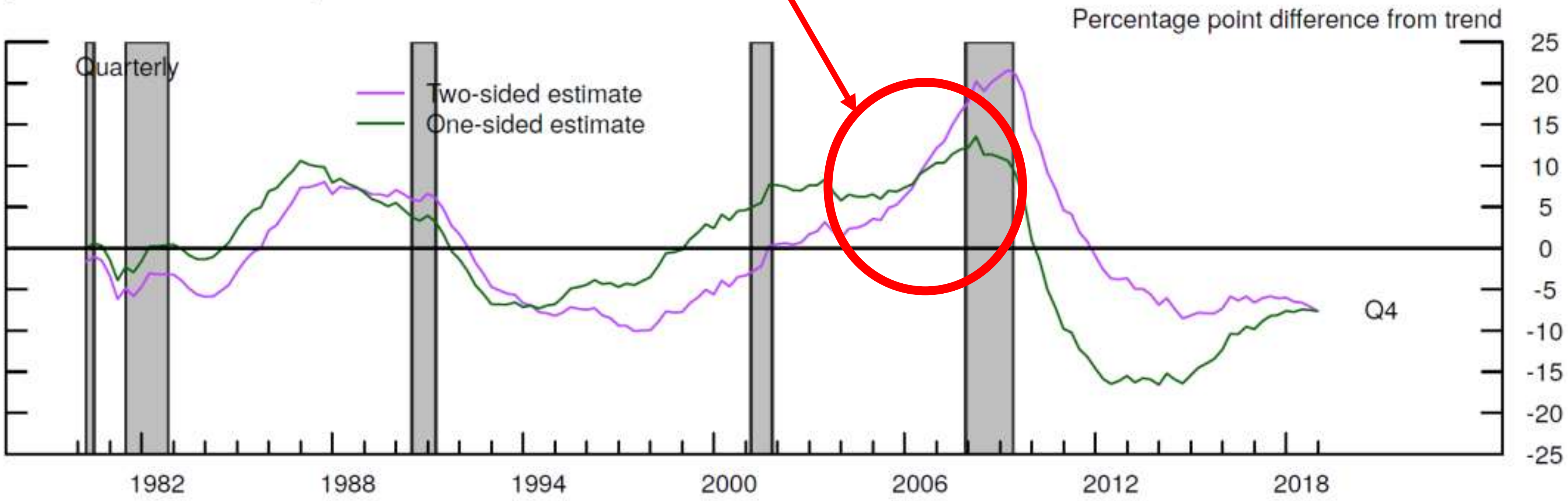
Suggestion 3: Motivate the indicators?

- Why would you expect NFCI, GZ, yield curve slope to be early warning indicators for policymaker definitions of financial crises?
- Think of them more as business cycle indicators
- Tell us more about your own indicator
- And let’s talk about the credit-to-GDP gap…

Well-known real-time estimate problems

Private nonfinancial sector credit-to-GDP ratio gap
(actual relative to trend)

Policymakers looking at green line
Economic historians look at purple line



Note: Calculated using an HP filter with lambda=400,000.
Source: Financial Accounts of the United States, NIPA, and staff calculations.

Suggestion 4: Alternative credit measures

- We know that credit booms are the major predictors of crashes
- The orthodox Basel c2y gap may not be best policy-relevant measure
- Real-time estimates
  - One-side estimates of trend
  - Real-time data – before revision
- Three-year growth rate in credit
- Split household and business credit
- Augment with house prices

In conclusion

- This paper has the potential to be a real contribution to the scientific literature on downside tail risk to growth
- Has very obvious use in a policy context…
- …and in that context I hope it catches on!