Discussion: “The Pricing of Sovereign Risk under Costly Information”
(Grace Gu and Zachary Strangebye)
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Notable Contributions

- Evidence of time-varying macroeconomic volatility is rapidly growing
  - Bloom (2009), Fernandez-Villaverde et al. (2011)

- Introduce costly info acquisition (Veldkamp, 2011) into sovereign risk model: lenders incur cost to acquire some info about default probab.
  - *Endogenous time variation in country risk spread* that is quantitatively important (calibrated model explains 78% of total)
  - During crises, default risk rises but risk premium falls because of info acquisition—standard models may understate default risk during crises
  - U-shaped relationship between transparency and sovereign welfare
Intuition, Questions, and Testable Implications

- Basic mechanism behind main results is intuitive and reasonable
  - Lenders acquire costly info primarily during crises
  - This causes bond yields to respond to normally unobserved shocks during crises, which raises spread volatility

- Methodological contribution is notable in its own right
  - Sovereign’s default and borrowing decisions as well as lenders’ costly info acquisition are jointly endogenous

Two main questions came to mind while reading the paper:

1. What type of info are lenders actually acquiring during crises?
2. How do calibration assumptions affect the quantitative results?
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Public Information Acquisition?

- Idea of costly info acquisition primarily during crises is key to results
  - Novel idea, intuitively realistic assumption

- Less intuitive is the assumption that acquired info is public
  - A public forecaster incurs info acquisition costs to produce a higher quality signal during crises
  - This higher quality signal is common knowledge among all lenders

- Paper does address this assumption:

  Tractability (p. 12) “There is an inherent difficulty associated with market-based information acquisition problems.”

  Interpretation (p. 13) “Real world analogues of the forecaster might be... Bloomberg or Reuters... the Wall Street Journal or the Financial Times... Moody’s or S&P... the IMF.”
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### The Forecaster

- There is one forecaster for all lenders, solves info acquisition problem

\[
\min_{\rho_{mx,t} \in [0,1]} E\tilde{x}_t E\tilde{m}_{t+1,\tilde{s}_{t+1}}|\tilde{x}_t, s_t \left[d_t(\tilde{m}_{t+1}, \tilde{s}_{t+1}, B_{t+1}) - \bar{d}_t\right]^2 + \kappa I(\rho_{mx,t})
\]

- \(d_t\) is 0 if no default, 1 if default
- \(\bar{d}_t\) is forecaster’s forecast of \(d_t\)
- \(\rho_{mx,t}\) is info content of forecast (correlation between signal \(x_t\) and unobserved shock \(m_{t+1}\)), \(\kappa > 0\) measures cost of info acquisition

- During crises, squared forecast error \(E[d_t - \bar{d}_t]^2\) is most sensitive to info content of forecast \(\rho_{mx,t}\), so forecaster optimally decides to acquire more info and incur more costs
Testable Implications of Public Info Acquisition

Simple testable prediction of the model

- Forecaster's signal, $x_t$, is common knowledge among all lenders, so signal and its info content (accuracy) can be observed
- Model predicts that info content of forecaster's signal, $\rho_{mx,t}$, will be greater during crises than during normal times

Is this prediction supported by the data?

- Stylized model, but paper mentions IMF, Bloomberg/Reuters, WSJ/FT
- Paper uses searches for “Ukraine IMF” to measure info acquisition, so why not look at quality of IMF forecasts in and out of crises?
- Naive intuition is that this prediction is not supported by the data
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Better Public Forecasts during Crises?

What if the data do not support the model’s prediction that public forecasts are more accurate during crises?

1. May need to add exogenous time-variation in volatility
   - Will help to make forecaster’s public signal less accurate during crises
   - How much time variation in volatility explained by endogenous info acquisition vs. exogenous assumption?

2. Assume lenders acquire private rather than public info during crises
   - Could also mean lenders interpret public info differently
   - Potentially a more intuitive and realistic assumption
   - Is the model tractable in this case, and do main results change?
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**Private Information Acquisition in the Model**

- Assume lenders acquire private rather than public info during crises
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- One challenge in this case is that bond price $q_t$ becomes a public signal that aggregates lenders’ private info
  - To prevent full info revelation, can introduce noise traders (Kyle, 1985)

- Qualitative results should be unaffected
  - During crises, lenders still acquire costly info, so bond yields still respond to normally unobserved shocks and thus spread volatility rises
  - No longer any prediction that public signal accuracy improves in crises

- Quantitative results may change substantially, however
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Info Acquisition and Model Calibration

- Info acquisition measured via Abnormal Search Volume Index (ASVI)
  - SVI measured using Google searches for “Ukraine IMF”
  - ASVI measures log deviation of SVI from median of previous periods
  - Definition follows Da, Engelberg, and Gao (JF, 2011)

- Unit info cost $\kappa$ is calibrated to match fraction of time $\text{ASVI} > \zeta$
  - Info threshold $\zeta$ is defined as $\zeta = 0.5 \max \{\text{ASVI}_t\}$
  - Only one episode in data, around 2014 Russian annexation of Crimea
How Sensitive are the Quantitative Results?

- Paper proposes model-free metric of time variation in spread volatility

$$CVR = \frac{1}{\hat{T}} \sum_{t \in \hat{T}} \frac{\hat{\sigma}_{t:t+w}}{\hat{\sigma}_{t-w-1:t-1}}$$

- $\hat{T}$ is set of periods with large change in spread (Aguiar et al., 2016)
- $\hat{\sigma}_{x:y}$ is sample st. dev. using periods from $x$ to $y$
- Benchmark model sets $w = 5$

- Calibrated model explains 78% of CVR from data, which is a nice result, but how sensitive is this result to calibration assumptions?
  - Different info thresholds $\zeta$
  - Match moments of ASVI distribution instead of using info thresholds
Calibrated Info Cost $\kappa$ Depends on Info Threshold $\zeta$

**Figure 2:** Quarterly ASVI for the Search Term “Ukraine IMF”

Figure: Info threshold used in calibration is $\zeta = 0.5 \max \{\text{ASVI}_t\}$
Quantitative Results Vary with Info Cost \( \kappa \)

**Figure 8:** Crisis Volatility Ratios Across \( \kappa \)

![Graph showing the relationship between information cost and crisis volatility ratios.](image)

**Figure:** Calibrated value in model is \( \kappa = 0.522 \times 10^{-3} \)
The End

Thank You