What Interbank Rates Tell Us About Time-Varying Disaster Risk
By
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Objective

- Propose a way of identifying time-varying disaster risk using interbank rates and their options
- Explore empirical relation between this estimated disaster risk and stock market asset prices

Motivation

- Literature:
  - $\Rightarrow$ Rare disaster models as a paradigm in the macro-finance literature show success in contributing to major asset pricing puzzles, first and second moments Riez (1998), Barro (2006), Gabaix (2012), Gourio (2012), Wachter (2013), among many others

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  - ⇒ Major criticism of this paradigm: what is this heavier left-tail (that eventually feeds into the nonlinearity in asset prices)? Chen, Dou, and Kogan (2017), Cochrane (2017)
- This paper aims to measure disaster risk using interbank data, with the assumption that banking disasters are reasonable proxies for consumption (real) disasters

Main ideas

- Follow Seo and Wachter (2018a) and assume a latent Poisson process for banking disasters with stochastic intensity λ_t (short-run disaster risk) and its time-varying mean ξ_t (long-run disaster risk)

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- Two-step MLE to back out the disaster risk latent variables, λ_t and ξ_t

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Interesting empirical exercise, pushing the important agenda of understanding the existence and empirical estimation of time-varying disaster risk in the (consumption-based) asset pricing literature! I enjoyed reading it!

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1. Chicken-or-egg problem between macroeconomic and banking disasters
2. The execution
3. Interpretations of the disaster risk components
4. Several implications worth highlighting

Comment 1: Consumption disasters, banking disasters

- Consumption disasters: low-probability rare economic declines.
  Banking disasters: extremely unlikely events in which the interbank market with major banks collapses.

- The authors take a stand assuming that (as mentioned multiple times in the paper) interbank disaster risk is a proxy for consumption disaster risk $\Rightarrow$ Banking disaster risk leads to major drops in consumption/macroeconomic environment.

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Comment:

- It still needs to be better motivated than citing several papers. Why? This assumption leads to modeling and estimation choices which comprise the core of the paper. Also, in the original Barro (2006), World Wars I and II, besides the Great Depression, are also disasters but $\neq$ banking crises.

- I propose a statistical way of testing it next $\Rightarrow$

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- The current estimation philosophy:
  1. $\{$consumption, expected inflation$\}$ is an exogenous system with uncorrelated shocks, assuming that $dN_t = 0$ during the sample period (1997-2017)
  2. Consumption and expected inflation shocks enter the nominal pricing kernel that prices safe and interbank rates
  3. Disaster risk, short- and long-run stochastic intensity state variables, is then filtered using observables (government bond and interbank market moments)
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Proposal:

- The paper mentions that a one-step estimation is extremely challenging – which is understandable.
- I propose to estimate a consumption-expected inflation system in the first step with consumption disaster shocks, e.g. $dN_{c,t}$; then, in the main step, assume the banking disaster, e.g. $dN_{b,t}$, to be a correlated/linear process of $dN_{c,t}$. This will not need the big assumption the paper makes + might change the results

Comment 2: The execution

- Data:
  1. Monthly real consumption per capita from NIPA/FRED typically has the temporal aggregation effect (Working, 1960); need to clean up some autoregressive terms.
  2. Given the empirical focus and the reduced-form nature of the model, why use monthly consumption data? Industrial production growth has a higher quality given its timely releases to represent the real economy.

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- A typo? (page 15)

$$\delta_0 = \hat{\mathbb{E}}[r] - \left(\delta_\lambda \bar{\xi} + \delta_\xi \bar{\xi} + \delta_q \hat{\mathbb{E}}[q],\right)$$

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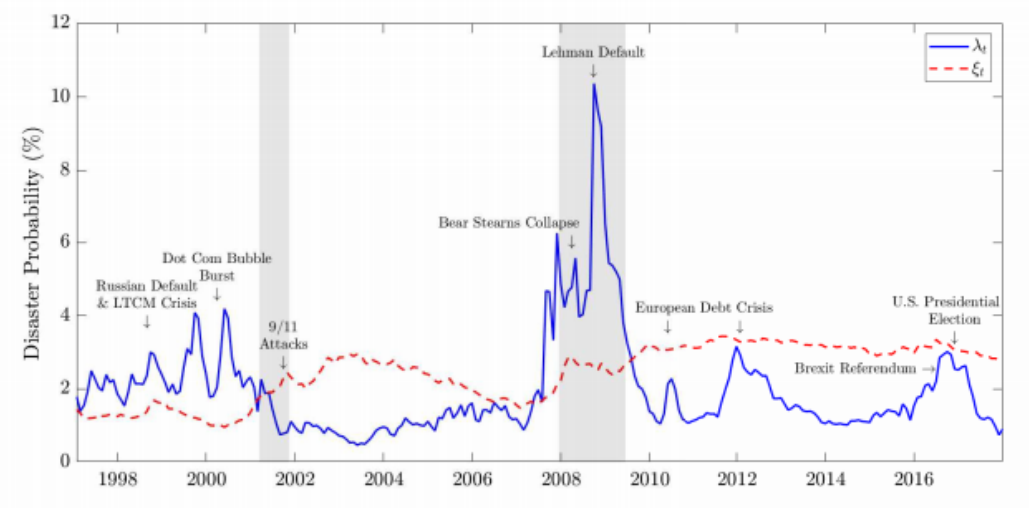

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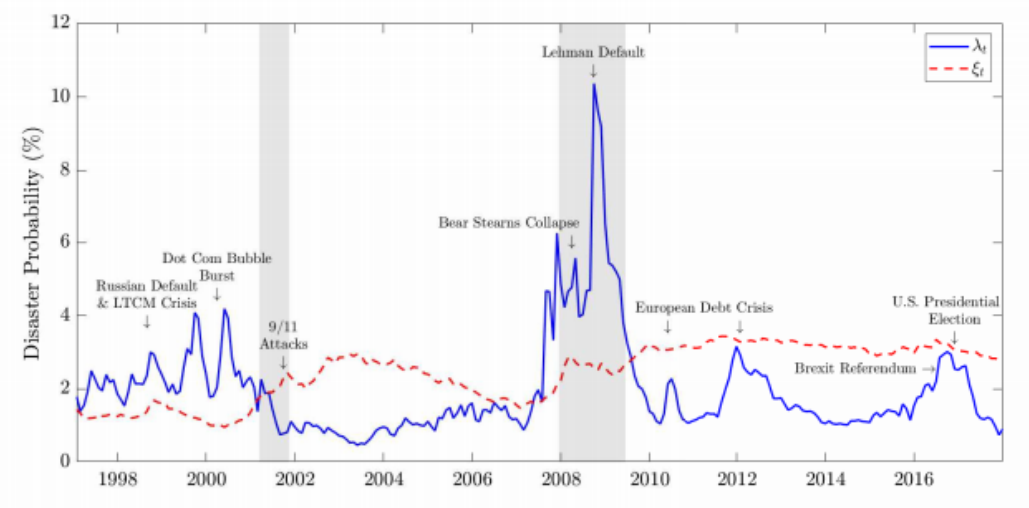

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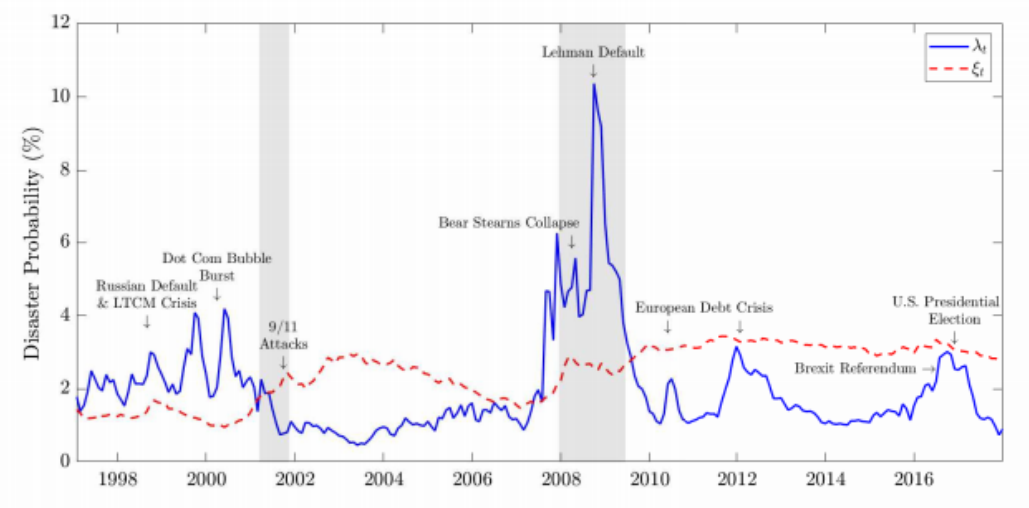

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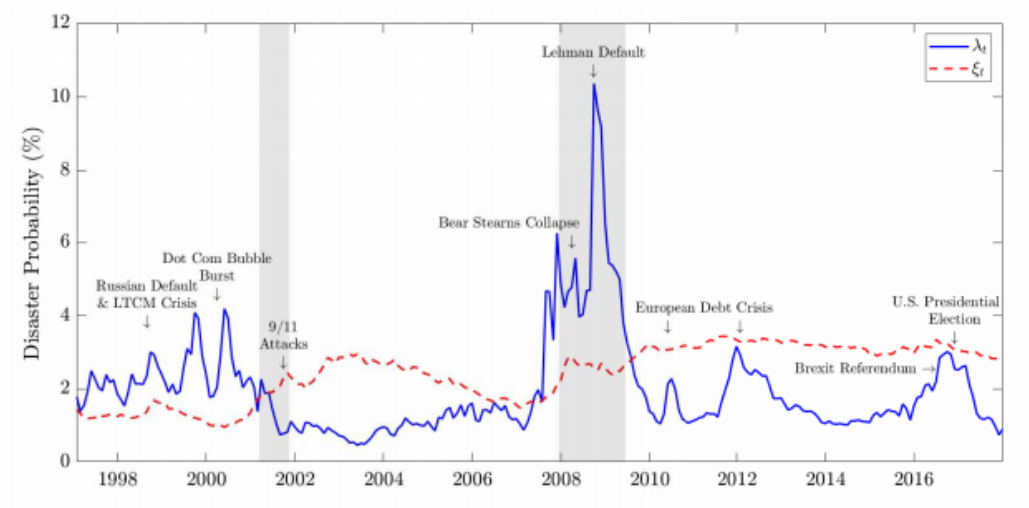

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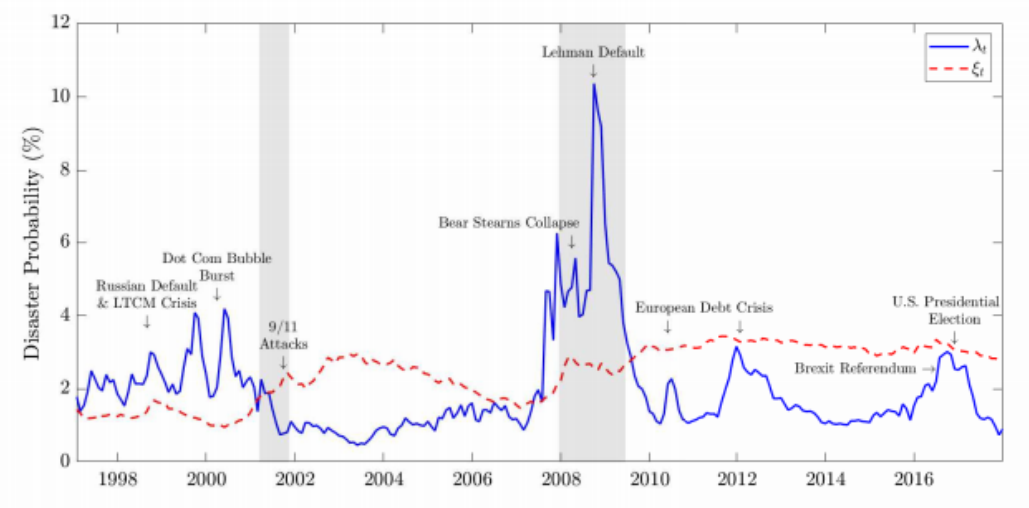

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   (2) Consumption definitely didn't go down when Bear Stearns collapsed; the estimates did capture default risk, but not consumption disaster risk – going back to my Comment 1

Comment 4: Several implications worth highlighting

- I like Table 2 $\Rightarrow$ It nicely links back to the original goal in this literature, explaining equity asset moments! The paper should build more around it in my opinion, which in turn can help readers increase confidence about the disaster risk estimates

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- Proposal:
  1. An ideal, consistent model should also try to price equity asset moments while fitting government bond and interbank markets
  2. With the current estimation/model, the paper should also check return predictability. The high explanatory power to the valuation ratio is a double-edged sword: Is this just the business cycle you are capturing?
  3. I would not include the cross-section analysis, Table 3, in this paper

Conclusion

- I highly recommend it!
- To make it more convincing:
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Thank You!

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