Hengjie Ai, Ravi Bansal, Hongye Guo, and Amir Yaron

Identifying Preference for Early Resolution from Asset Prices

---

Discussion by Jaroslav Borovička (NYU)

2023 China International Conference in Finance, July 2023

Outline

1. Theoretical arguments
2. Empirical implementation
3. Comments ... mainly concerning empirics.

Preference for timing or resolution of uncertainty

Expected utility models (von Neumann and Morgenstern (1947), Savage (1954)) allow for reduction of compound (intertemporal) lotteries.

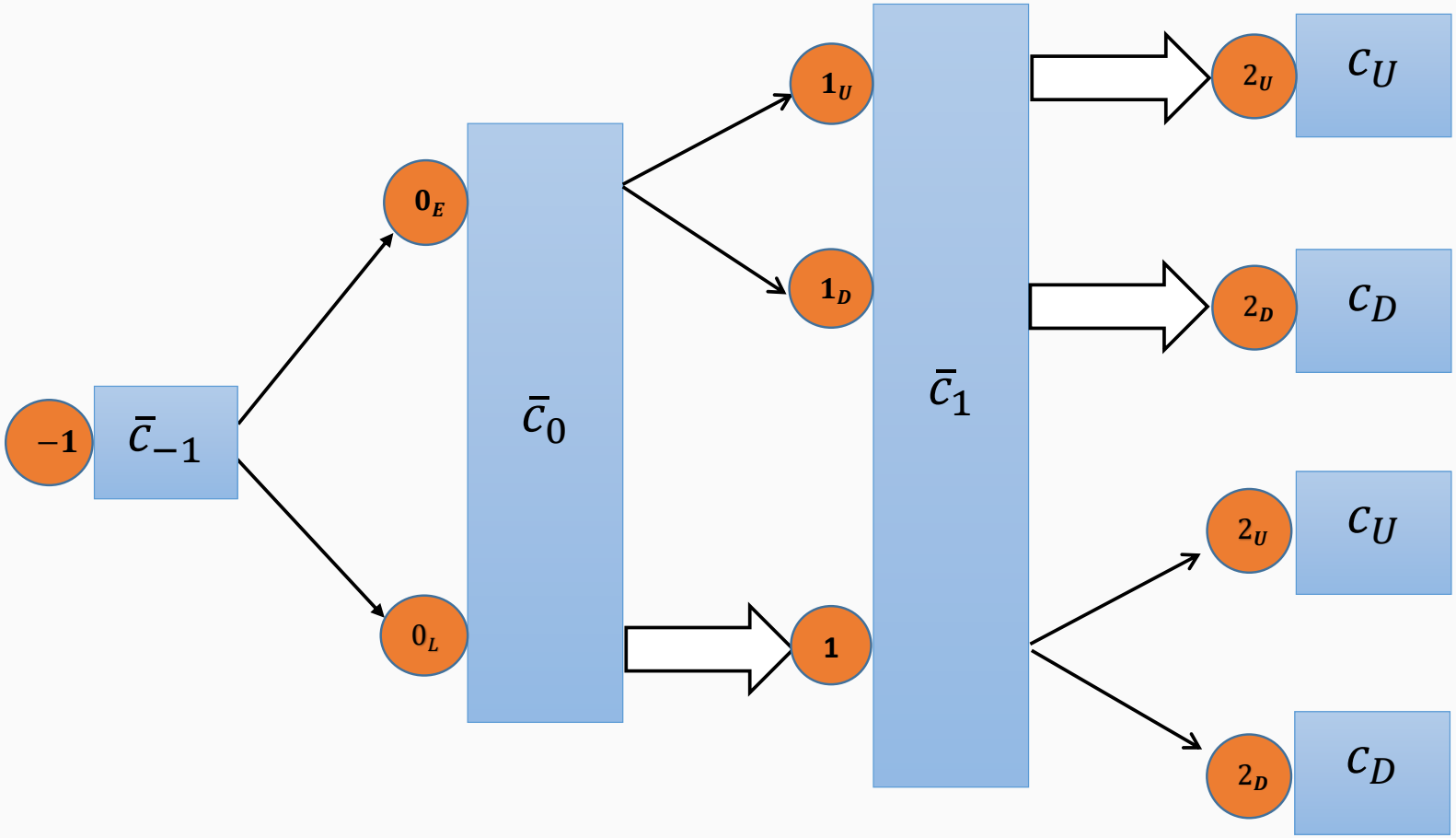
- independence axiom
- agents are indifferent to timing of resolution of uncertainty

A range of non-separable preference models relax the independence axiom.

- recursive preferences (Kreps and Porteus (1978), Epstein and Zin (1989)) are a prominent example but the class is broader (Ai and Bansal (2018))
- agents can exhibit preference for early or late resolution of uncertainty

Intertemporal lotteries

Period -1	Period 0	Period 1	Period 2
	Resolution of information quality	Resolution of uncertainty	Realization of outcome



Recursive preference case

We would like to devise a test that detects preference for early/late resolution of uncertainty from observed assset prices.

Recursive preference model (Kreps and Porteus (1978), Epstein and Zin (1989))

- preference for early resolution if and only if $\gamma > \rho$
- risk aversion larger than reciprocal of IES
- typical calibration in a large majority of asset pricing applications
- Epstein, Farhi, and Strzalecki (2014): willingness to pay to resolve uncertainty early is extremely large in typical calibrations

But what if the recursive preference model is misspecified?

- preference for timing of resolution of uncertainty confounded with other traits (preference for persistence, ...)
- we need a cleaner test

Testing preference for early/late resolution of uncertainty

The test builds on Ai and Bansal (2018) who consider a broader class of preferences satisfying generalized risk-sensitivity (GRS).

- preference for early resolution (PER) equivalent to positive risk premia on assets that comove positively with informativeness of news

PER: Good news is when we learn in period 0 that an informative signal is coming in period 1 (early) about outcome in period 2.

- implies high $V_0(0_E)$ and hence low $MU_0(0_E)$
- then assets whose value rises after learning that the signal will be informative should earn a positive risk premium between periods -1 and 0.

Empirical implementation using FOMC announcements

Theory is clear. How to implement this empirically? FOMC announcements.

1. Period 1: FOMC announcement reduces implied volatility (IV)
   - a larger reduction in IV is a more informative signal (early resolution)
2. Period 0: Find predictors for informativeness of the signal for period 1
   - ratio of short-term vs long-term implied volatility (inverse slope)
3. Period -1: Determination of period when informativeness is revealed
   - time between periods -1 and $0 \approx 5$ days (RavenPack attention data)
4. Risk premia between periods -1 and 0
   - short-maturity claims to market volatility comove positively with predicted informativeness
   - such claims should have high average returns between -1 and 0

Results

The paper implements the empirical part in a series of regressions.

1. Period 1: FOMC announcement reduces implied volatility (IV)

   ✓

2. Period 0: Find predictors for informativeness of the signal for period 1

   ✓

3. Period -1: Determination of period when informativeness is revealed

   ✓

4. Risk premia between periods -1 and 0

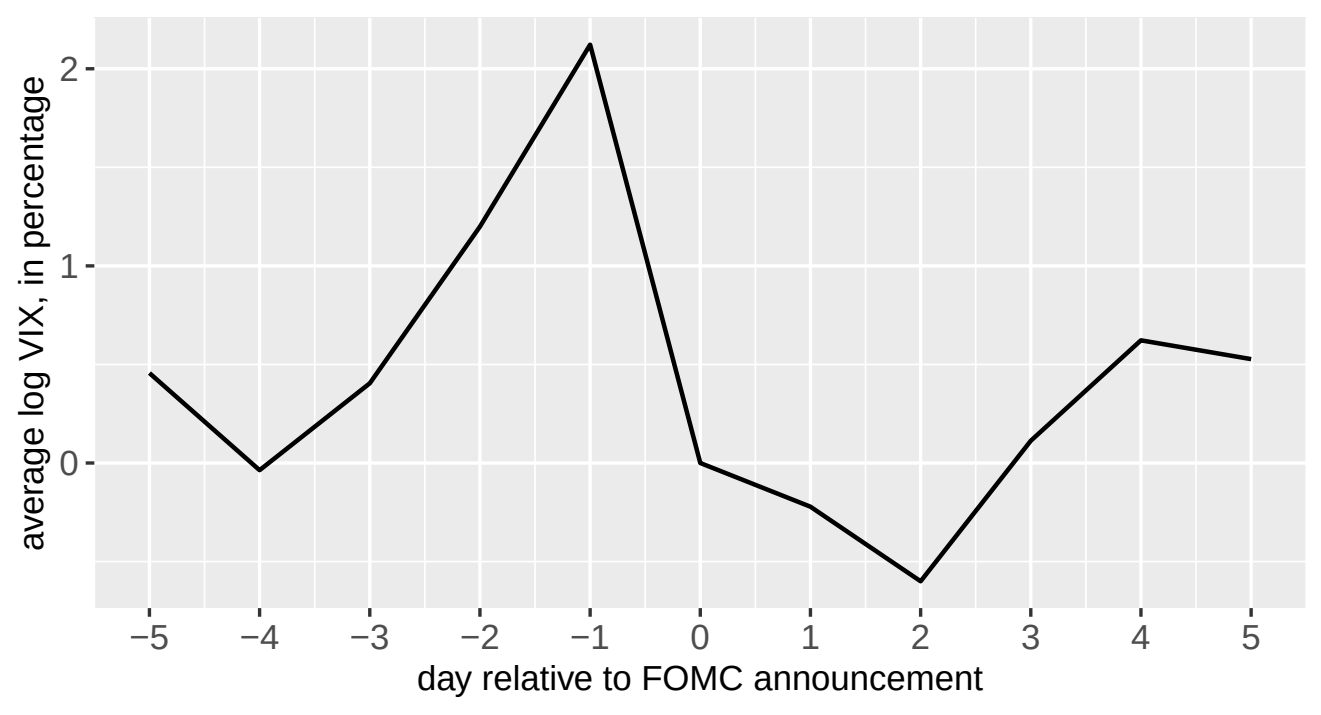
   ✓

Comments I.

1. Individual regressions are all statistically significant ...
   - but is the joint test also statistically significant?
2. The theory (Theorem 1) states that PER is equivalent to any asset comonotone with informativeness having a positive risk premium
   - the paper tests just a small number of them
   - the theory suggests we should test a large cross-section, with informativeness being a 'factor' with a positive price
   - we should also not resort to only one type of announcement

Comments II.

3. The run-up in VIX before the announcement seems to be puzzling.



Comments III.

4. Theoretical test keeps the terminal (90 day?) amount of uncertainty fixed, and announcements control only the timing.

- but announcements can also affect the longer term distribution, which also moves prices
- the paper does not tackle this potential contamination in any way

5. The whole paper is only about determining a single sign (early/late resolution)

- it would be extremely useful if we were able to convert the partial and qualitative regression coefficients into some quantitative information how to calibrate model parameters, etc.

Conclusion

This paper builds on clear and well-rooted theory.

- it proposes a conceptually clean (and pedagogically useful) test of PER.

Empirical implementation is, however, objectively hard.

- the results do seem intuitively plausible but an econometrician may raise questions

Even if we trust the result, the question remains how much information did we extract, and how can we use this information in further work.

- turning qualitative into quantitative information is essential!
- how much uncertainty is being resolved and what is the cost paid

Appendix

Literature I

Ai, Hengjie and Ravi Bansal. 2018. "Risk Preferences and the Macroeconomic Announcement Premium." *Econometrica* 86 (4):1384–1430.

Epstein, Larry G., Emmanuel Farhi, and Tomasz Strzalecki. 2014. "How Much Would You Pay to Resolve Long-Run Risk?" *American Economic Review* 104 (9):2680–2697.

Epstein, Larry G. and Stanley E. Zin. 1989. "Substitution, Risk Aversion, and the Temporal Behavior of Consumption and Asset Returns: A Theoretical Framework." *Econometrica* 57 (4):937–969.

Kreps, David M. and Evan L. Porteus. 1978. "Temporal Resolution of Uncertainty and Dynamic Choice Theory." *Econometrica* 46 (1):185–200.

Savage, Leonard J. 1954. *The Foundations of Statistics*. Wiley, New York.

von Neumann, John and Oskar Morgenstern. 1947. *Theory of Games and Economic Behavior*. Princeton University Press, 2nd ed.