The Impact of Uncertainty on Data Revision
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Motivation

- Monetary policy decisions in real-time based on evaluating current economic conditions.
- Accuracy of preliminary announcements of macroeconomics variables and subsequent revisions.

Under what circumstances do initial data tend to be irrational and unreliable?

Channels for Impact of Uncertainty

**Uncertainty**
- Ghosal and Loungani (2000)
  - Uncertainty has negative impact on investments.
  - Greater impact for smaller firms.

**Non-sampling Error**
- Trueman (1994), Hong et al. (2000)
  - Herding behavior: market analysts’ forecasts tend to be biased and inefficient during high uncertainty periods.

**Data**

- U.S. real-time nominal output data.
  - Source: Federal Reserve Bank of Philadelphia.
  - Preliminary estimates 45 days after each quarter.
  - Last vintage: May 2013.

**Rationality test of initial data under uncertainty**

<table>
<thead>
<tr>
<th>Uncertainty (EPU)</th>
<th>Revision</th>
<th>Adj. R²</th>
</tr>
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<tbody>
<tr>
<td>0.262*</td>
<td>0.619</td>
<td>0.017</td>
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Results

- Rationality test: contemporaneous information has significant impact on the final revisions only under high uncertainty (not report).
- Contemporaneous info incl. unemployment rate, Standard and Poor’s index of 500 stock prices, and Treasury bill interest rate, etc.

**Uncertainty leads to the irrationality of the first releases**

- Reliability test (Table 1)
  - Col. 1: Impact of uncertainty on final revisions
  - Lack of evidence / inconclusive
  - Col. 2: Impact of uncertainty on magnitude of revisions
  - Significantly greater magnitude of revisions under uncertainty

**Uncertainty causes both over- and under-estimation in the initial data and leads to the unreliability of the first releases**

Method

**Rationality test of initial data under uncertainty**

- Reporting agency used all available information at release time?
- If so, the contemporaneous information should not have impact on final revision.
- Significant impact on the final revision under high uncertainty (EPU > 1).
- No impact under low uncertainty (EPU < 1).

**Test impact of uncertainty on the reliability of the initial data**

- If the initial data tend to be over- or under-estimated under uncertainty, uncertainty should have significant impact on the final revisions.
- Also, if uncertainty leads to both over- and under-estimation of the first releases, uncertainty might have no impact on the final revisions but have an impact on the revision magnitudes.

Conclusion

- Using U.S. nominal output real time data and an uncertainty measure from 1985 to 2013, this study shows that uncertainty leads to the irrationality and unreliability in the first releases.
- Results imply that during times of greater uncertainty, policymakers should proceed with caution when utilizing the first releases of economic data.