Discussion of “Can We Measure Inflation Expectations Using Twitter?” by Angelico, Marcucci, Miccoli, and Quarta

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Research Questions

1. Do tweets say something about inflation?

2. How can we exploit tweets to create a daily indicator for inflation expectations?

3. Can this index help in forecasting or nowcasting inflation expectations?
Overview

Why create a tweet-based indicator of inflation expectations?

- Survey-based measures capture “true” expectations, but are only available monthly.
- Market-based measures can be computed daily, but contain time-varying risk and liquidity premia.
- Tweet-based measures can be updated daily and capture “true” expectations.
Overview

Methods

- Use two Twitter-based datasets: long and short samples.
  - Long: Counts for targeted keywords
  - Short: Counts, full text, metadata, user bio
- Apply dictionary-based methods and topic model (LDA).
- Examine user metadata.

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Results

- Twitter-based measure is highly correlated with market-based and survey-based measures.

- Contains predictive content.

- Economists and journalists appear to play an important role.
Comments

- Well-executed and carefully explained.
- Thoughtfully-constructed dictionary-based method.
- State-of-the-art topic model (LDA) from computational linguistics.
- New dataset and techniques for measuring inflation expectations at a high frequency.
Interpreting Counts

- Count levels and differences used in this paper.
- Filtering is needed to smooth and remove shocks.
- Index construction similar to Apel and Grimaldi (2014) and Malmendier et al. (2014).
- Semantic indices often use ratio to map counts to (-1,1):

\[
\text{index} = \frac{\text{hawk}}{\text{hawk} + \text{dove}} - \frac{\text{dove}}{\text{hawk} + \text{dove}} \tag{1}
\]
Interpreting Counts

What is expectation of inflation at \( t < 15 \) and \( t > 15 \)?

MA processes may capture part of this.
Using intensity-based measures could reduce spiking and strengthen the signal without the need to smooth.

Loughran and McDonald (2011) use a dictionary-based methods to measure sentiment intensity within a document.

- E.g. Pool tweets daily and then apply word count with normalization.


- E.g. Perform separate query for Bank of Italy and place in the denominator.
Recombining LDA with Statistical Weights

- Identify many inflation components individually via topic model.
- Recombine or apply dimensionality reduction.
  - Principal components analysis
  - Factor model
  - Lasso regression
- This could yield interesting extension or second paper.
  - E.g. How important are shocks to components?