NLP for Nowcasting and Economic Tracking

Papers by

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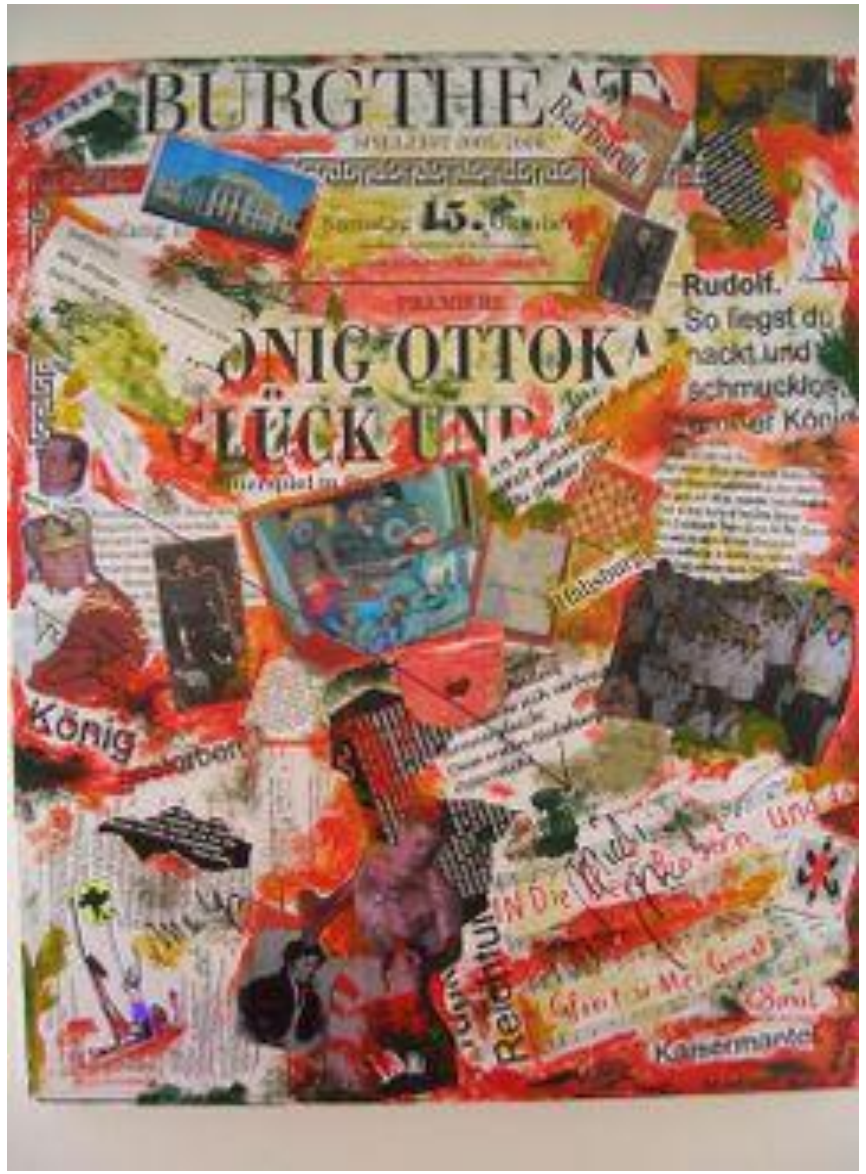
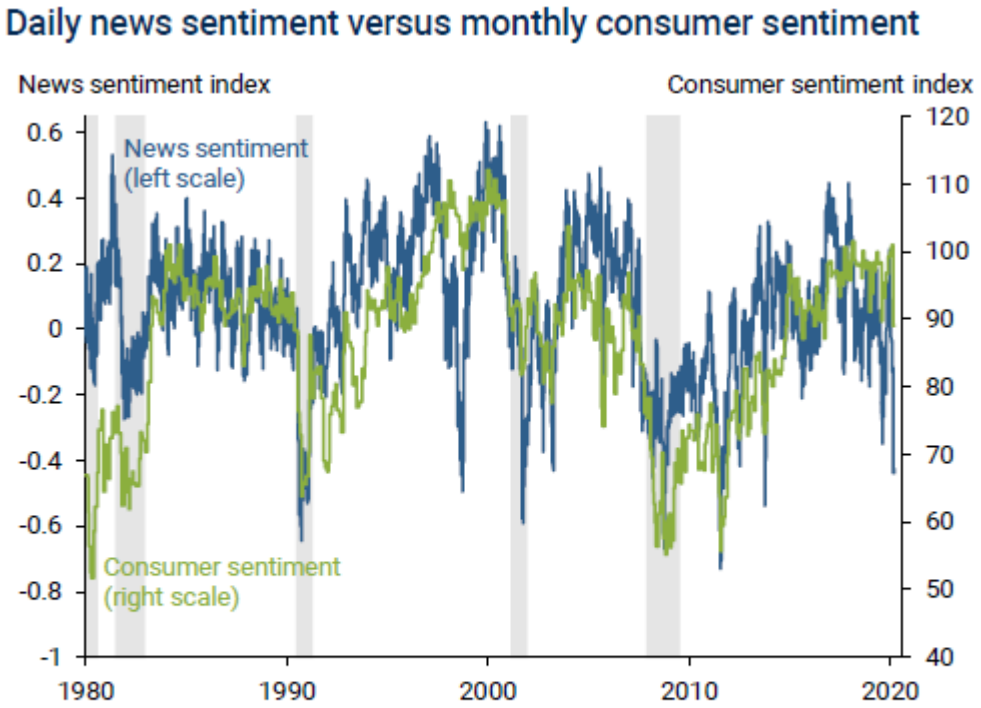
Clipping newspapers used to be a hobby for kids…



… or a way to preserve anonimity…

… but since Baker et al. (2016) a vast literature has flourished showing that clipping newspapers can also serve for building news-based indicators of uncertainty and sentiment, that in turn can help tracking the state of the economy and predicting where the economy is headed



Note: Moving average of daily news sentiment; see Shapiro, Sudhof, and Wilson (2020) for methodology. Gray bars indicate NBER recession dates.
Source: Daily News Sentiment Index and Michigan survey.

Framing in the literature

Two general approaches in the field of computational linguistics to quantify the emotional content in a set of texts:

- *lexical approach*, which relies on a predefined list of words associated with an emotion, referred to as lexicons. Sentiment lexicons typically classify words into three categories: negative, neutral, or positive. <<BOTH PAPERS IN THIS SESSION>>

- *machine-learning* (ML) techniques: learn sentiment weights for words and even entire phrases (based on large "training" datasets), then use those weights to measure the sentiment of the given textual passage.

A bird’s eye view

Barbaglia et al.

- US (6 newspapers)
- Sentiment
- Aspect-based and fine-grained
- Use of different tenses
- GDP, CPI, Empl, IP (q & m)
- Also quantile analysis

Aprigliano et al.

- Italy (4 newspapers)
- Sentiment and uncertainty
- By sector and topic
- By journal
- GDP, C, I, VAServ (q)
- Bayesian MA techniques

Barbaglia et al.

Points of strength:

- *aspect-basedness*: sentiment is calculated only on the basis of the words in a neighborhood of and that are semantically dependent on 6 tokens of interest (economy, financial sector, inflation, output, monetary policy, unemployment)
- *fine-grainedness*: terms are not only positive, neutral or negative, but given a value between -1 and 1
- use of verbal tenses (past, present, future)
- Role of sentiment in the tails of the distribution

Barbaglia et al.

My comments:

- more terms related to *Inflation* could help (deflation, prices, oil, fuel, sales, cost-of-living, bills; see Angelico et al. 2020). Why not 'unconventional policies' in the list for *Monetary policy*?
- select only articles that do not explicitly mention a nation other than the US, since your targets are US aggregates. Get rid of articles on the US-China war trade, on the Iraqi conflict, on the US-North Korea relationship, possibly inducing a bias (more bad than good news)?
- comparison with standard survey-based sentiment measures (e.g. Michigan Consumer Sentiment Index)
- comparison of the indicators based on the three verbal tenses within each token. Is S(*future*) at time t a good proxy of S(*present*) some periods ahead? Could indicators based on future tense be used to extend the forecast horizon?

Aprigliano et al.

Points of strength:

- both sentiment and uncertainty
- develop indicators by topic (15) , sector (21) and journal (bias)
- calculated only on the basis of the words in a neighborhood (within 5 words) of the tokens of interest; use of valence shifters
- horse-race with standard survey-based sentiment measures
- most appreciable results from density forecasts

Aprigliano et al.

My comments:

- extend polarity beyond the dichotomy -1/1
- evaluate verbal tenses
- look at forecasting properties of higher frequency variables (e.g. industrial production)

Q&A and General Discussion

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