

ADVANCES IN NOWCASTING ECONOMIC ACTIVITY: SECULAR TRENDS, LARGE SHOCKS AND NEW DATA

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CONTRIBUTION OF THIS PAPER

- ▶ This paper is about nowcasting economic activity
- ▶ We propose a Bayesian dynamic factor model (DFM) that features explicitly:
 1. Low-frequency variation in the mean and variance
 2. Heterogeneous responses to common shocks (leads/lags)
 3. Fat tails

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 1. Low-frequency variation in the mean and variance
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- ▶ Methodological contribution:
 - ▶ Estimation algorithm that can handle non-linearities and non-Gaussianities
 - ▶ Keeps intuition and computational ease of Kalman Filtering and Gibbs sampling
 - ▶ Bayesian methods give important role to probabilistic assessments

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- ▶ Empirical contribution # 1:
 - ▶ Produce daily estimate of US real GDP growth 1 Jan 2000 to 31 Aug 2020
 - ▶ Forecasts outperform benchmark econometric models, including NY Fed's model
 - ▶ More accurate than 80% of SPF participants and comparable to Fed Greenbook

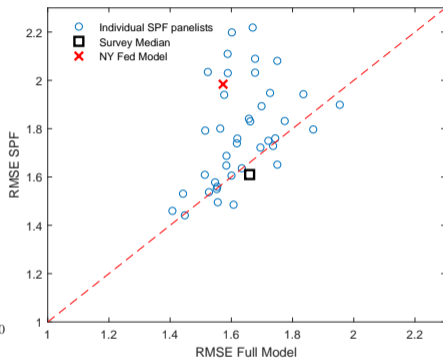
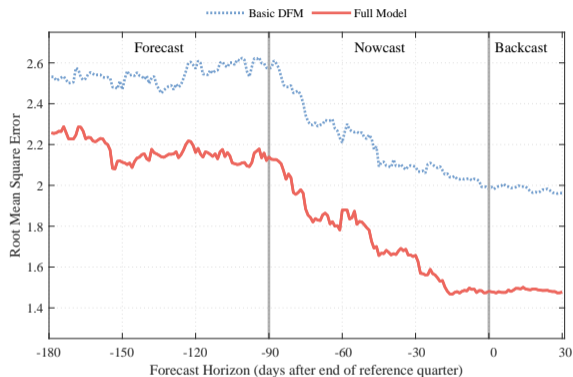
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 - ▶ Stochastic volatility and fat tails critical to track activity during the pandemic
 - ▶ But COVID-19 episode is more than a “macroeconomic outlier”
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- ▶ Empirical contribution # 3:
 - ▶ Incorporate “alternative” data series which became available in 2020
 - ▶ Solve problem of short history by linking with closely-related traditional series
 - ▶ New data contribute to more timely assessment of the downturn

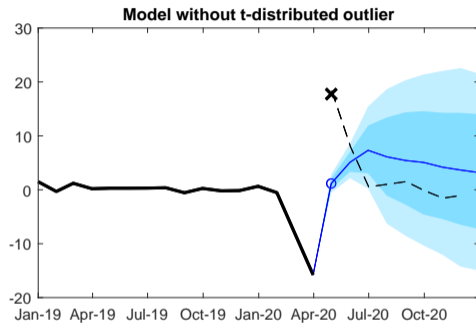
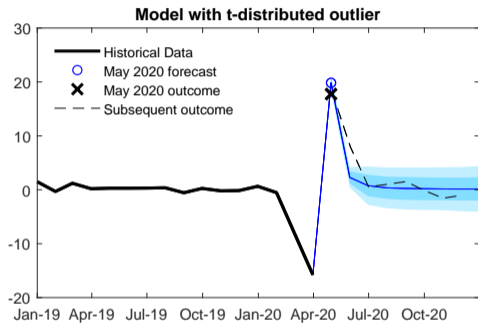
COMPARISON WITH BENCHMARK MODELS & SURVEY EXPECTATIONS



- ▶ Forecasts outperform benchmark econometric models, including NY Fed's model
- ▶ More accurate than 80% of SPF participants (and comparable to Fed Greenbook)

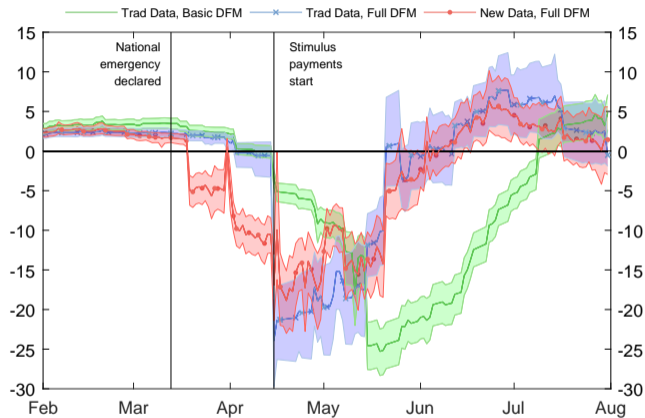
MODELING OUTLIERS

RETAIL SALES: MAY 2020



- ▶ Transitory outliers in macro data happen regularly: strikes, natural disasters, ...
- ▶ Helps model predict dynamics in individual series more accurately in 2020
- ▶ ... Allow us to capture the breakdown in comovement observed over the Pandemic

USING NEW DATA SOURCES IN THE DFM



- ▶ Key idea: use new data in combination with similar “traditional” series
- ▶ Incorporating new data enables faster tracking of the collapse in real time

SUMMING UP

- ▶ We propose a Bayesian DFM, which explicitly incorporates:
 1. Low-frequency variation in the mean and variance
 2. Heterogeneous responses to common shocks
 3. Outlier observations and fat tails

... Incorporate “alternative” data series which became available in 2020
- ▶ We provide a thorough evaluation of the novel model features for the nowcasting process and demonstrate how they improve point and density nowcasts in real time
- ▶ The model produces reliable nowcasts also during the pandemic
 - ▶ Stochastic volatility and fat tails critical to track the fall in activity during the pandemic...
 - ▶ ... as well as to capture the large increase in common variance and breakdown cross-sectional comovement among activity indicators
 - ▶ New data contribute to more timely assessment of the downturn