Off to the Races: A Comparison of Machine Learning and Alternative Data for Predicting Economic Indicators

by

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Discussion by
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Econometrics / Statistics Perspectives

Cross-section:

Econometrics: $\hat{\beta}$ ("causal estimation")

ML: $\hat{y}(= x'\hat{\beta})$ ("prediction")

Time-series:

Econometrics: $\hat{y}$ ("prediction")
(Time series econometrics $\leftrightarrow$ predictive dynamic econometric modeling)

ML: $\hat{y}$ ("prediction") (???)

So what new things does ML bring to time series?

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Time Series Econometrics (TSE) vs. ML

Significant TSE / ML overlap:

– Acknowledge misspecification throughout

– Seek good out-of-sample predcitive approximations

– Use the relevant loss function

– Shrinkage

– Selection

– Forecast combination (“ensemble averaging”)

ML goes farther in some important directions:

– High dimensionality

– Nonparametric nonlinearity

– Useful new algorithmic procedures

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Time Series Econometrics (TSE) vs. ML

But TSE Goes Much Farther in
Important Macroeconometric Directions...

– Trend

– Seasonality

– Serial correlation & cycles

– Summarizing voluminous results
(Impulse-response fns, variance decomps, Granger causality, ...)

– Customized reduced-rank linear models (DFM, FAVAR, ECM, ...)

– Customized nonlinear models (regime-switching, volatility)

– Structural evolution and breaks

– Quantifying forecast uncertainty

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In the Trenches, Down and Dirty...

$$GDP \supset CE \supset PCE \supset PCES \supset PCES_i$$

This paper is interested in *PCES*.

PCES is partly based on the Quarterly Survey of Services (QSS).
(The $PCES_i$ are informed by the QSS_j only from release 3 onward.)

One would like to make the QSS more timely, by nowcasting.

Do ML nowcasting "regressions" of QSS components on timely x's:
$$QSS_{it} \rightarrow x_{1t}, ...x_{Kt}, \quad i = 1, ..., 188$$

x's include both BLS data (from CES and CPI)
and private data (First Data credit cards and Google Trends)

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9. ML emphasis on ensemble averaging probably *is* highly relevant (e.g., random forrests).

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