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"Nowcasting economic activity with electronic payments data: a predictive modeling approach"

by Carlos León, Banco de la República

Discussion by Edward Gaffney

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Preface

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As usual, the views expressed in this paper are those of the author and do not necessarily reflect those of the Central Bank of Ireland.

Papers referenced:

Galbraith, John W. and Greg Tkacz, "Nowcasting with payments system data," *International Journal of Forecasting*, 2018, 34 (2), 366-376.

León, Carlos and Fabio Ortega, "Nowcasting economic activity with electronic payments data: A predictive modeling approach," *Borradores de Economía* 1037, Banco de la República 2018.

Lucas, Robert. "Econometric policy evaluation: A critique," *Carnegie-Rochester Conference Series on Public Policy*, 1976, 1 (1), 19-46.

Structure

1. **Contribution of León and Ortega (2018) to nowcasting**
2. Machine learning and economic reasoning
3. Purpose of forecasting

León and Ortega (2018) concept

"Forecasting" = "looking ahead". "Cast" is very old English meaning "throw", or, "look" = "throw" our eyes in a direction.

"Nowcasting" = "looking to now". Predict a slow indicator using fast data.



Previous papers primarily use payments data to ***improve economic forecasts*** (see Galbraith and Tkacz, 2018).

León and Ortega (2018) predict monthly goods and services production ("ISE") as a ***non-economic statistical process:***

> electronic payments and recent production determine today's production, all measured as "log-return" growth rates.

Good idea. It's hard to identify a deep economic meaning of interbank payments excluding cash and intra-bank payments.

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León and Ortega introduce us to another new technique in ***machine learning***, which is always welcome.

León and Ortega (2018) method and results

Compare two models.

"AR" autoregressive model: Predict production naïvely, using only lagged, historic values of production.

"ARX" model: To AR, add payments data that are "exogenous", not determined within the system.

Result: Every ARX model identified by the machine is a significant improvement on AR models.

(In real life, production probably causes payments, but for nowcasting, this is fine.)

Of course, no-one would use a simple AR model because plenty of influential economic series are published quickly:

Point 1: I would like to see the speed-accuracy trade-off *versus* a real-world economic predictions of production.

We surely gain from fast predictions, but what exactly do we gain / lose?

Suggestions on León and Ortega (2018)

Colombia production

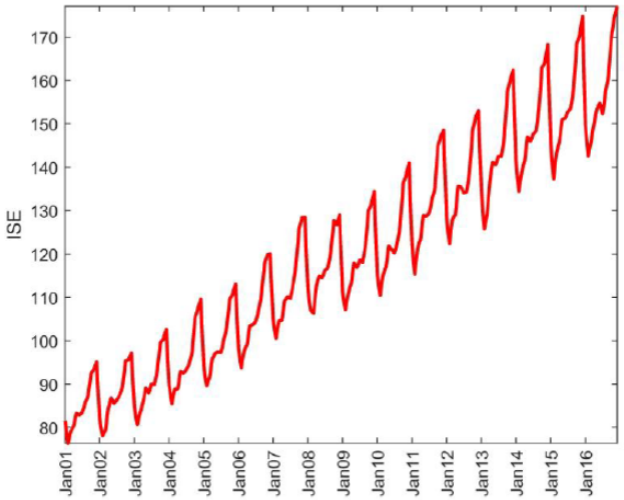
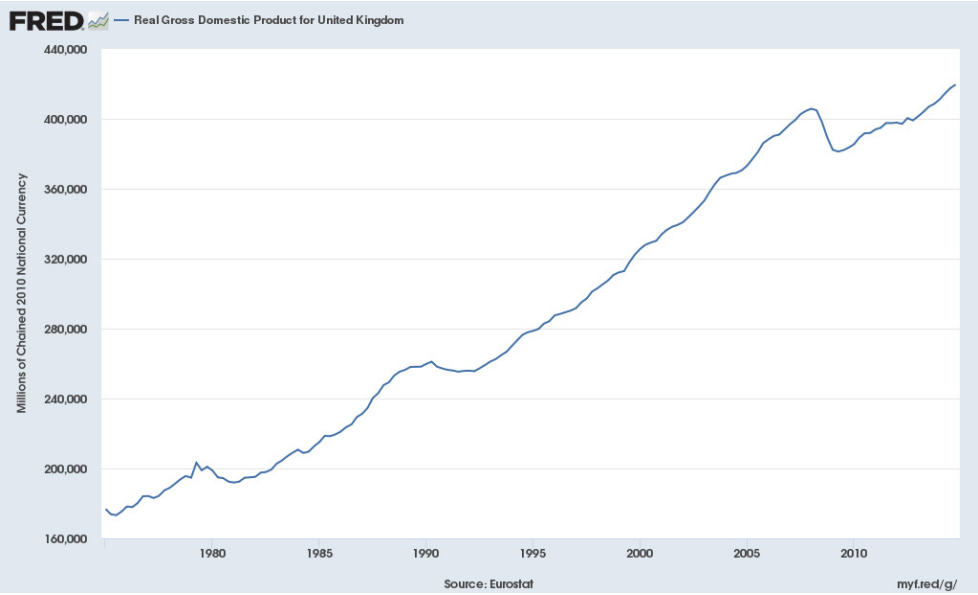


Figure 1. ISE. Non-seasonally adjusted, at constant prices, revised index. Source: DANE.

UK GDP



Point 2: Colombia production exhibits very stable growth over 15 years. Is the UK GDP accuracy benchmark too easy?

If forecasting growth rates, it would be good to also depict these in the paper and presentation.

It would also help if the authors forecast GDP and compared the magnitude to the prediction of ISE.

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Machine learning and economic reasoning

True that policy-makers rely on supportable reasoning and fear the “black box critique”

How do I explain to citizens why I am making credit more expensive?

Yet even more than this, they tend to be really worried about the “Lucas critique” (1976)

All our data are individual responses within current structures, given unobserved preferences

Non-linear models are especially sensitive to changes in structures.

We can **never** remove economic influences from the AR / ARX model, because they contain past production!

We can only choose whether we formally measure economic influences on production, or not

“Not” is a valid choice, but we incur the Lucas critique if structures change

Structure

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2. Machine learning and economic reasoning
3. **Purpose of forecasting**

I have my forecast, what now?

Eternal question in nowcasting: do we gain in speed more than we lose in accuracy?

GDP and production indices are not useful in and of themselves

Nobody eats GDP

GDP and production indices inform policy

Do we need stimulus or restraint?

Point 3: If we lose the link to economic determinants that policy tools control, why not just use electronic payments as the indicator?

1. Pure indicator: no loss of accuracy
2. Either way, I can only argue for my opinion from a random statistical model