GF program Business Indicators: Final Results

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Based on 6 projects with 9 colleagues

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Starting point, the EICIE

The Econometric Institute Current Indicator of the Economy (EICIE)

First release: 2004Q4

Concerns: Quotes for real GDP growth in the <u>current</u> quarter

Motivation: CBS gives reliable data <u>three months after</u> that quarter

Based on: Model for GDP growth with Randstad data as input, where the Randstad data concern <u>forecasts</u> (from another model, which is only available to Randstad company) (and past GDP growth)

Updates: Each time CBS and/or Randstad releases new data, new EICIE quotes are made

Publication: in ESB, on ESE website, and quite often media attention

And still: EICIE is <u>unique</u> (no competitor)

Project 1: Accuracy of EICIE

All individual forecasts are unbiased

EICIE has the smallest mean and median forecast errors. On squared errors and absolute errors, the results are mixed

When translated to annual data, only CPB forecasts are most accurate in terms of the mean and median of absolute forecast errors. DNB forecasts are least accurate.

Project 2: Does the EICIE have any predictive value for specific sectors?

Relevant	Bias	Sectors
Yes	No	Mining
		Transport and logistics
		Information and communication
Yes	Yes	9 sectors
No	No	3 sectors
No	Yes	4 sectors

Project 3: Are there other indicators for predicting GDP growth in the Netherlands, that improve on the Randstad data?

There are many other leading indicators for Dutch GDP growth.

The lead time of candidate indicators varies much.

There are differences across indicators (predictive value and lead time) across business cycles stages

It is now possible to construct a new leading indicator for Dutch GDP that improves (substantially) on the EICIE.

Project 4: Can the EICIE be improved using machine learning and sentiment analysis?

Can machine learning techniques improve the EICIE, using (various versions of) the same explanatory variables as the EICIE (that is, past GDP and current and past Randstad)?

Can the EICIE be improved by using other variables (than past GDP and Randstad), that is, web-based sentiment variables?

Results: Yes and yes, and even so that Randstad and past GDP data can be replaced by alternative (sentiment-based) variables

Project 5: A new approach to measure consumer confidence, and how accurate is it?

Proposal is to collect randomized panel data rather than repeated cross-sections to measure consumer confidence. Randomized panel data allow us to not only observe longitudinal changes in confidence across our respondents, but also to observe changes in the spread in confidence across individuals, as well as changes in rate at which respondents change their state of confidence over time.

Application to measuring consumer confidence in The Netherlands over the period April 2010 to September 2016 with the purpose to produce one-month ahead forecasts of Dutch consumption.

The novel panel data indicator improves the forecasting accuracy (relative to Statistics Netherlands) for TOTAL CONSUMPTION, GOODS, FOOD, DRINK AND TOBACCO and OTHER GOODS.

Project 6: How accurate is the new consumer confidence measure for forecasting GDP sectoral growth?

Does consumer confidence help to predict GDP growth in sectors?

Lasso (CBS data):   yes, in 14 of 18 sectors

ARDL (CBS data):   yes, in 13 of 18 sectors

ARDL (new CCI data):   yes, in 6 of 18 sectors

End result

EICIE worked and works well, and it can be improved along various dimensions.

These dimensions are other models (non-linear), other variables, and other methods (machine learning)

In the future: combining all these findings into a single new indicator for GDP growth, and make it available to the public. This will be topic for a master thesis

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