Other indicators for predicting GDP growth in the Netherlands

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Results Project 3

Summary of projects 1 and 2

EICIE model is used to predict quarterly GDP growth (in the Netherlands). Input is number of people working for Randstad. Forecasts for Randstad are input for model.

EICIE is better or equally accurate than all other available measures (CPB, DNB ECB and so on)

EICIE useful for only a few sectors

This project (has three parts)

- Are there any other leading indicators for Dutch GDP growth?

  (like Industrial production, interest rates, international data)

- What is the appropriate lead time of candidate indicators?

  (like months, quarters, years)

- Are there differences across indicators (predictive value and lead time) across business cycles stages?

Part 1: Other leading indicators?

Definition: A reliable leading indicator for a business cycle is an economic time series that gives a consistent and timely indication of the future path of the economy

Consistency means

- not producing false turning points
- lead time similar across business cycles

Timely means

- considerable lead time (to make it practically useful)

Methodology

- Selection of candidate indicators based (1) on available literature and (2) on scraping databases of SN and OECD (GDP and other data run from 1997Q1 to 2016Q2)
- (1) gives 60 and (2) gives 77 candidate variables
- De-trending, working day correction, from months to quarters
- Application of various measures to decide on lead time
    - Only 62 variables remain of interest

Results

There are many interesting variables to explore further as leading indicators. At the moment and for these data, the most promising are the liquidity component (LIBOR short term interest rate), IFO business climate series and consumer confidence (SN based).

Part 2: What is the appropriate lead time of candidate indicators?

Previous results all based on linear models/correlations, now we turn to non-linear models which allow for two distinct regimes in GDP.

These regimes are expansions and recessions. We use a Markov switching regime model to examine if estimated states are aligned or whether there are leads and lags.

Results are that for 38 indicator variables we find significant leads and lags. Most powerful leading variables are the AEX and GDP growth of OECD countries (leading with around 3 quarters)

Part 3: Are there differences across indicators (predictive value and lead time) across business cycles stages?

The model now is a Markov switching model where asymmetric and nonsynchronous common cycles are allowed (based on methodology outlined in Paap et al, JBES, 2009).

Results are very favorable for two indicators: Business confidence and IFO: Business situations. Main finding is that upcoming recessions can be predicted with longer lead time than expansions.

Summary

There any 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.

A new composite leading indicator

Based on machine learning techniques (Best Subset and Neural Networks), and the leading variables Consumer confidence, business sentiment and trade, a reliable indicator is built.

Absolute Forecast Errors

EICIE	1.074
Best subset	0.795
Neural network	0.605