A new approach to measure consumer confidence

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Results Project 5

Outline

- A new method to collect high-frequency consumer confidence data at the individual level, still using the Katona questions

- Data collected using a randomized panel design. This amounts to collecting incomplete panel data such that we have the same (though not all) individuals being interviewed from one moment to another.

- A Markov transition model describes the persistence in an individual's confidence level. The model helps to estimate an expected response for each individual on the days on which the individual did not complete the questionnaire.

- To illustrate the usefulness of our approach, we employ the indicator to forecast Dutch consumption. We show that the incremental information content in the novel indicator helps to improve forecasting accuracy.
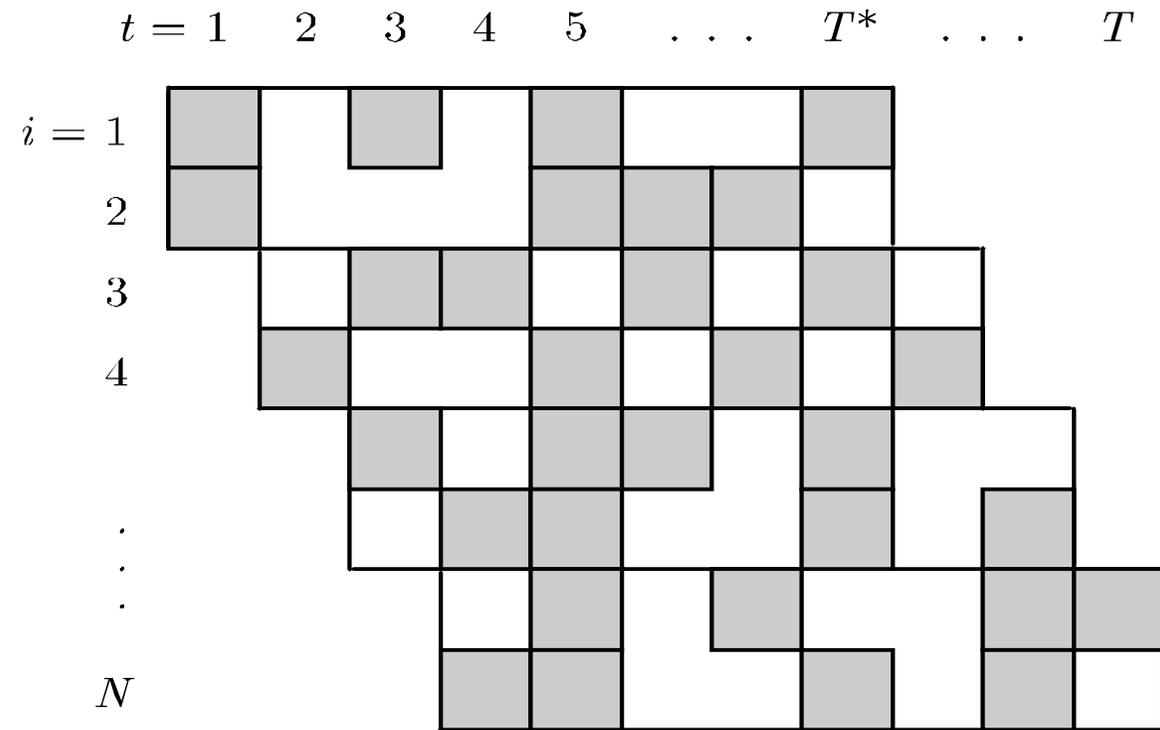
Data collection format: Repeated cross-sections

$$t = 1 \quad 2 \quad 3 \quad 4 \quad \ldots \quad T$$

$g = 1$

2

3

4

$\vdots$

G
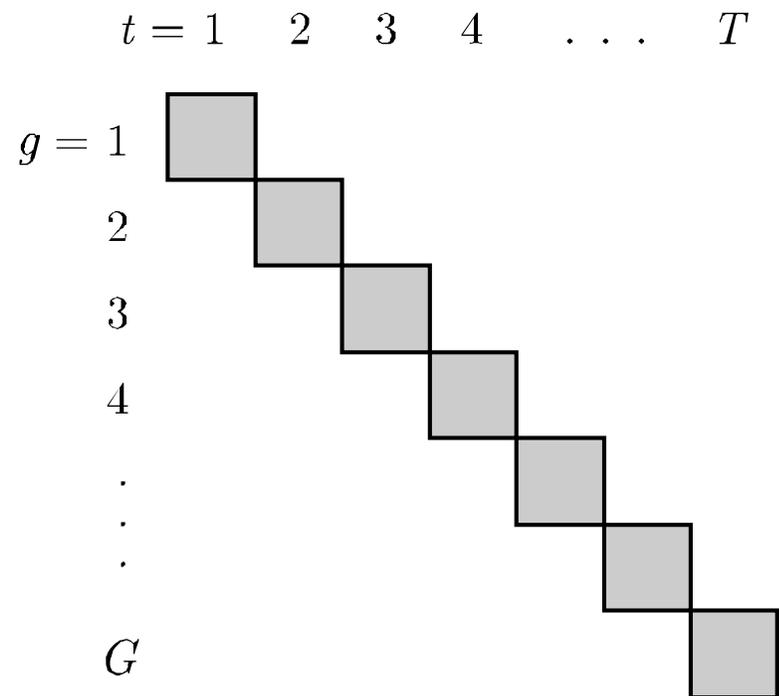
Data collection format: Michigan panel
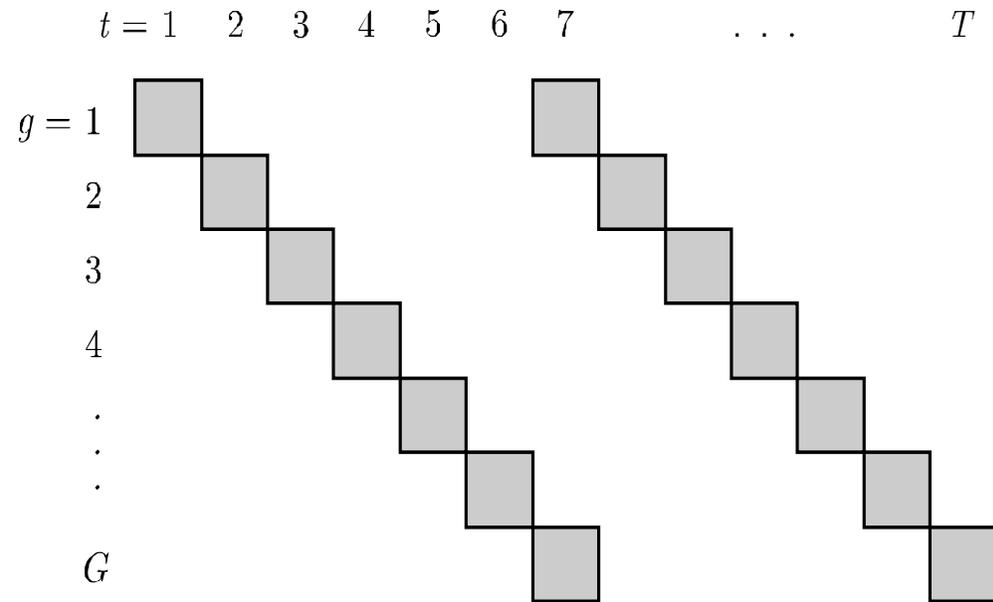
Our format: A randomized rotating panel

Katona questions

Economic Climate

1. How do you think the general economic situation in this country has changed over the last twelve months?

Possible answers: At present, it is better (1) / the same (0) / worse (-1)

2. How do you think the general economic situation in this country will develop over the next twelve months?

Possible answers: It will be better (1) / the same (0) / worse (-1)

Willingness To Buy

3. How does the financial situation of your household now compare to what it was twelve months ago?

Possible answers: At present, it is better (1) / the same (0) / worse (-1)

4. How do you think the financial situation of your household will change over the next twelve months?

Possible answers: It will be better (1) / the same (0) / worse (-1)

5. Do you think that at present there is an advantage for people to make major purchases, such as furniture, washing machines, TV sets, or other durable goods?

Possible answers: Yes, now it is the right time (1) / It is neither the right nor the wrong time (0) / No, it is the wrong time (-1)

The economic climate indicator is computed as the summed score of questions 1 and 2 averaged across all individuals. Similarly, the willingness to buy indicator is computed as the summed score of questions 3 to 5 averaged across all individuals. Finally, consumer confidence is defined as the average of all five scores.

Data collection

We invited all alumni who graduated as a MSc at our Econometric Institute to join an economic expert panel specifically set up for the occasion.

A first group of alumni was invited to join the panel in January 2010, and a second group was invited to join the panel in September 2011. The alumni who accepted the invitation were requested to complete a short questionnaire at most four times per year.

The invitations are sent out every week on Monday at 9 am. In order to be able to compare our indicator to the official CCI of Statistics Netherlands (SN), we used the same questionnaire as SN.

Over the period January 4, 2010 up to September 26, 2016, 272 alumni joined the panel. We sent out 5697 survey requests. The response rate was 29.8%.
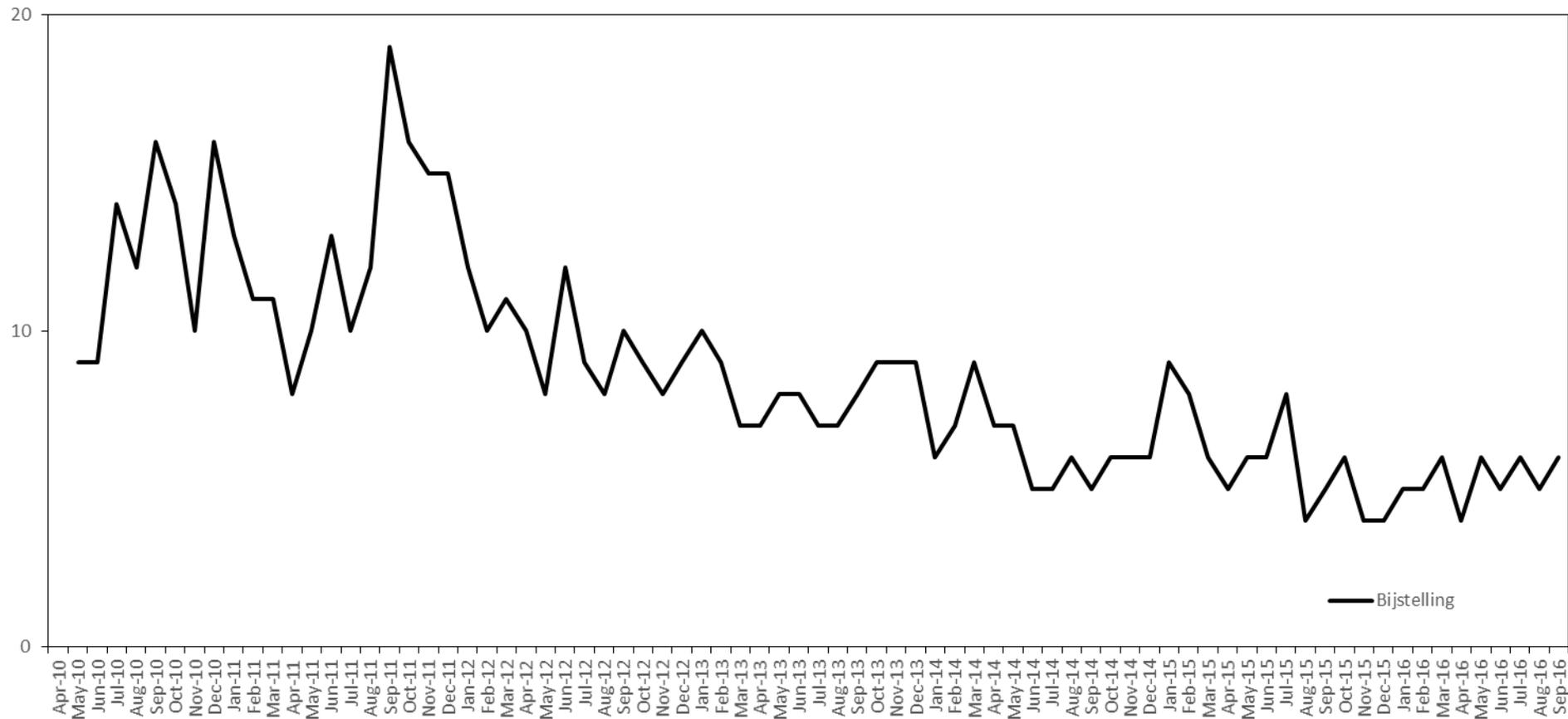
Results
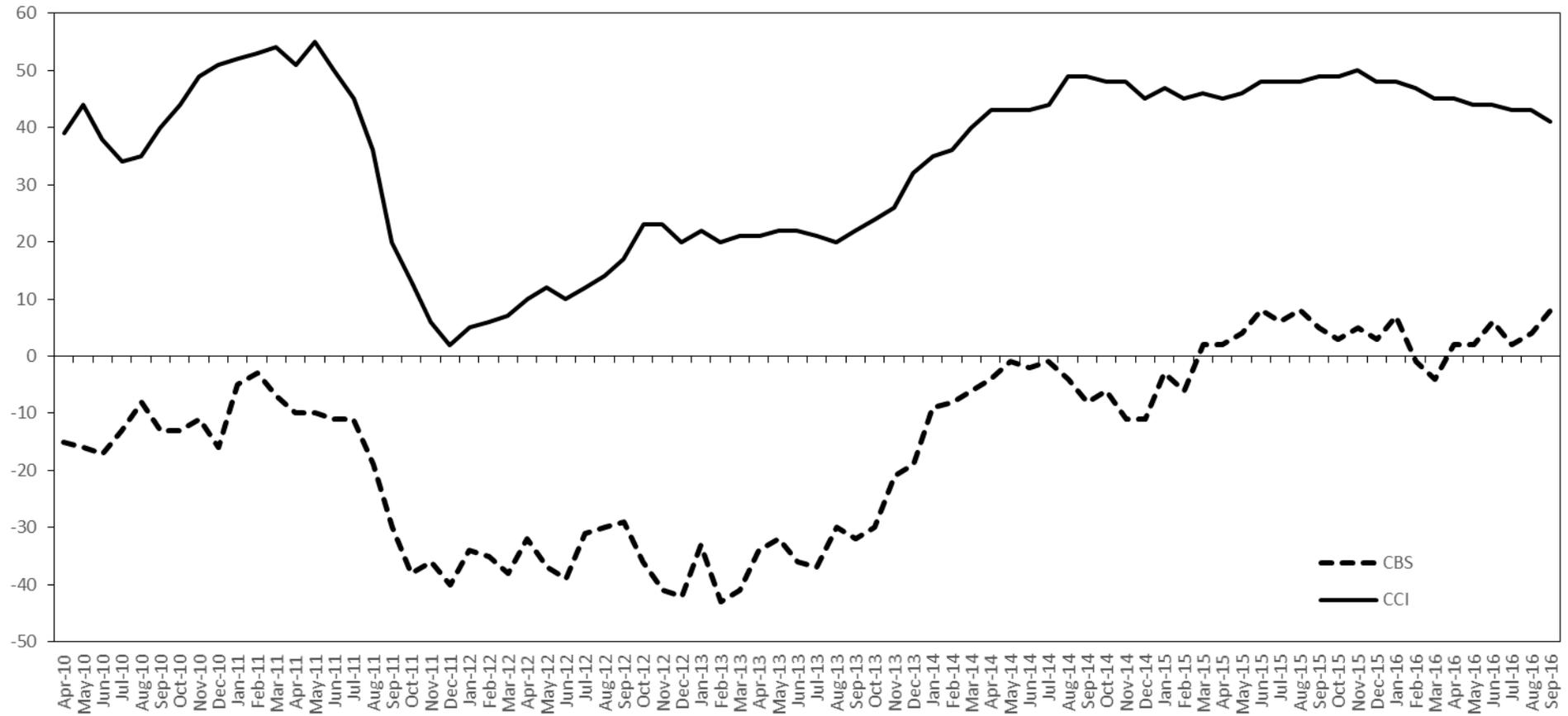
Also: spread in confidence across individuals, defined as the time-varying standard deviation
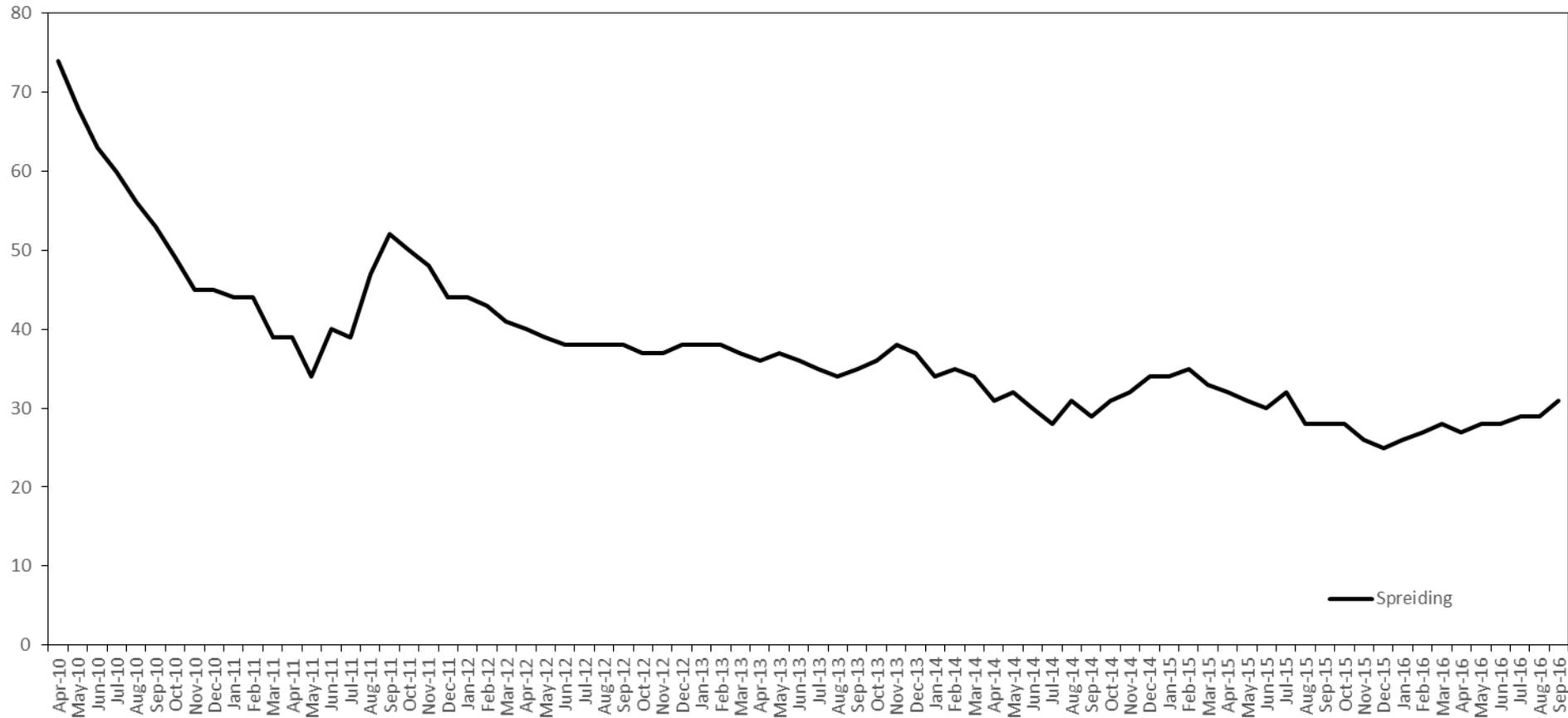
And, activity: the rate at which respondents have recently changed their state of confidence

Forecasting

The target variables in our forecast comparison are Dutch national household consumption and its four subcomponents over the period April 2010 to July 2016.

Household consumption is measured by SN on a monthly basis and reported in terms of total value.

Consumption is subdivided into SERVICES and GOODS, where GOODS are further subdivided into FOOD, DRINK AND TOBACCO, DURABLES and OTHER GOODS. DURABLES are defined as goods that in principle last more than one year, such as clothes and textiles, shoes, furniture, consumer electronics and cars. OTHER GOODS include energy, motor fuels and all other consumer goods that cannot be classified as FOOD, DRINK AND TOBACCO, or DURABLES.

Model (1) (based on SN data)

Change in consumption (month year versus same month previous year) function of the first two lags of the level of the consumer confidence indicator of SN, CCI$_{SN}$, alongside with a constant term and four possibly relevant control variables, which are monthly inflation, unemployment, the short-term (3 months) and long-term (10 years) interest rate

Models (2) and (3) (based on our CCI)

Model (2): we replace CCI_{SN} by our index CCI_{MS}

Model (3): Model (2) plus includes the spread and activity indicators, S_{t-1} and A_{t-1}

Results: Diagnostics of the estimated forecasting models (1), (2) and (3)

Target variable[1]	R^2 of (1)	R^2 of (2)	R^2 of (3)	Wald p-value of (3) vs (3)
Total consumption	0.35	0.41	0.50	0.01
Goods	0.30	0.34	0.47	0.00
Food, drink and tobacco	0.04	0.10	0.17	0.09
Durable goods	0.57	0.56	0.57	0.42
Other goods	0.33	0.35	0.47	0.00
Services	0.55	0.63	0.65	0.39

Results: Relative mean squared forecast errors and Diebold-Mariano p-values of the forecasting equations (2) and (13), compared to (1)

Target variable	MSE ratio (2) vs (1)	DM p-value (2) vs (1)	MSE ratio (3) vs (1)	DM p-value (3) vs (1)
Total consumption	0.79	0.04	0.68	0.00
Goods	0.80	0.04	0.66	0.00
Food, drink and tobacco	0.79	0.07	0.75	0.06
Durable goods	0.99	0.45	1.06	0.70
Other goods	0.89	0.16	0.83	0.03
Services	0.90	0.22	0.94	0.29

Conclusion

We proposed 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.

We demonstrated the usefulness of our approach in an 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. We showed that the incremental information content in the novel panel data indicator improves the forecasting accuracy for TOTAL CONSUMPTION, GOODS, FOOD, DRINK AND TOBACCO and OTHER GOODS.