



Seðlabanki Íslands

Operating the countercyclical capital buffer over the financial cycle: A panel study of the Nordic countries

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The views expressed are the authors' and not necessarily those of the Central Bank of Iceland.

Agenda



1. The countercyclical capital buffer and early warning indicators
2. The BCBS buffer guide for the Nordic countries
3. Defining and estimating the financial cycle
4. The financial cycle of the Nordic countries
5. Discussion
6. Conclusion



1. THE COUNTERCYCLICAL CAPITAL BUFFER AND EARLY WARNING INDICATORS

The countercyclical capital buffer



- Main objective is to protect the banking sector from system-wide risk that builds-up in periods of excessive credit growth.
- The aim is also to ensure the flow of credit from the banking sector in aggregate in times of stress.
- However, the CCB was not intended to manage the cycle.

Early warning indicators



- Standard methods to evaluate EWI include noise-to-signal ratios and AUC.
- Multiple research over panel of countries have found the credit-to-GDP gap to be the best EWI in predicting systemic banking crisis.
- The BCBS buffer guide creates a reference point across jurisdictions for setting the CCB.
 - The CCB level follows the credit-to-GDP gap.
- For indicator evaluation this paper focuses rather on CCB level prior to crisis rather than crisis prediction.
 - The time frame is also important, as at least six quarters are needed from signal prior to CCB taking effect.

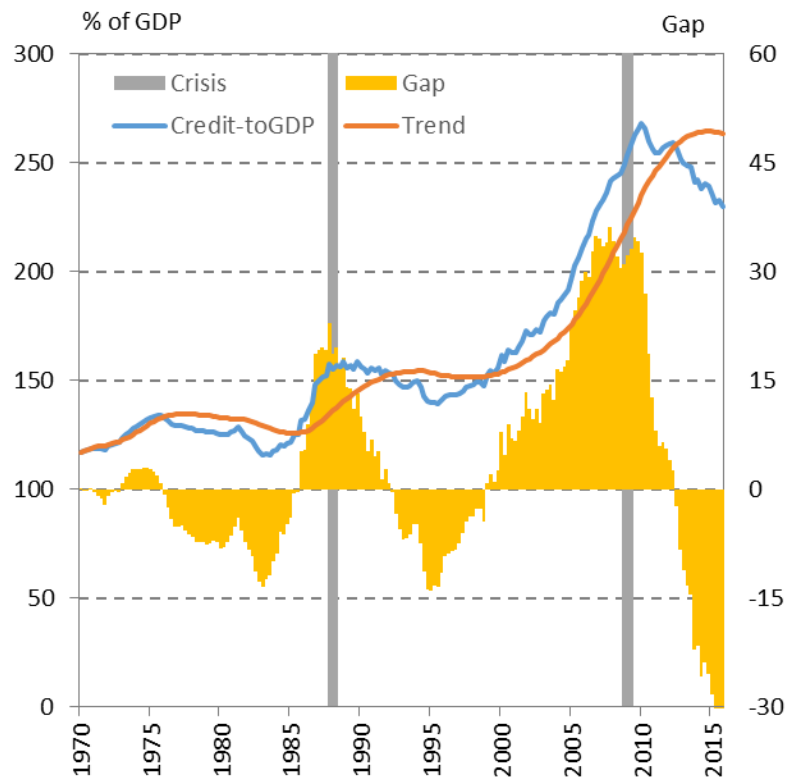


2. THE BCBS BUFFER GUIDE FOR THE NORDIC COUNTRIES

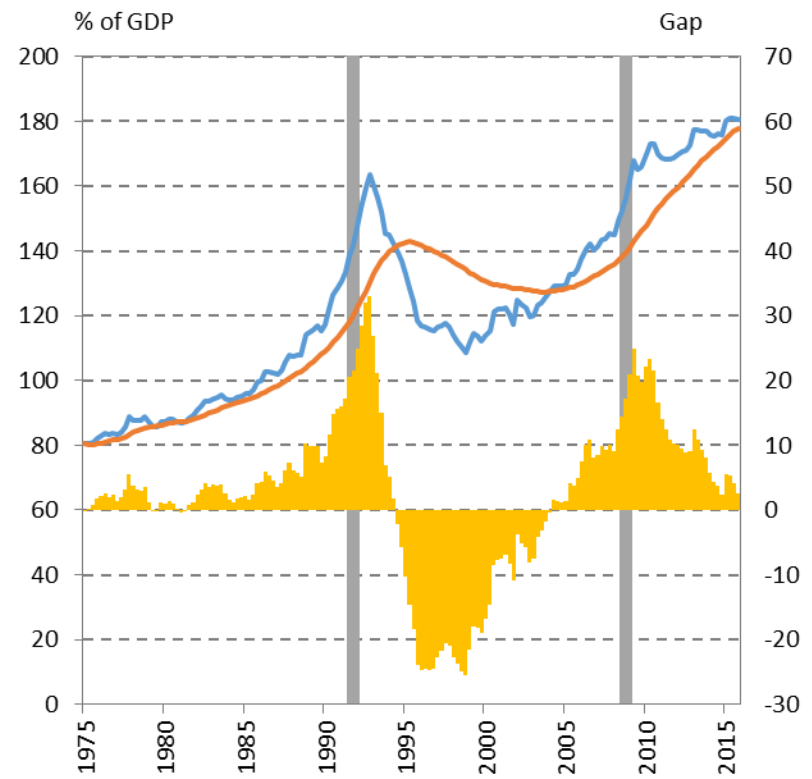
Credit-to-GDP gap



Denmark



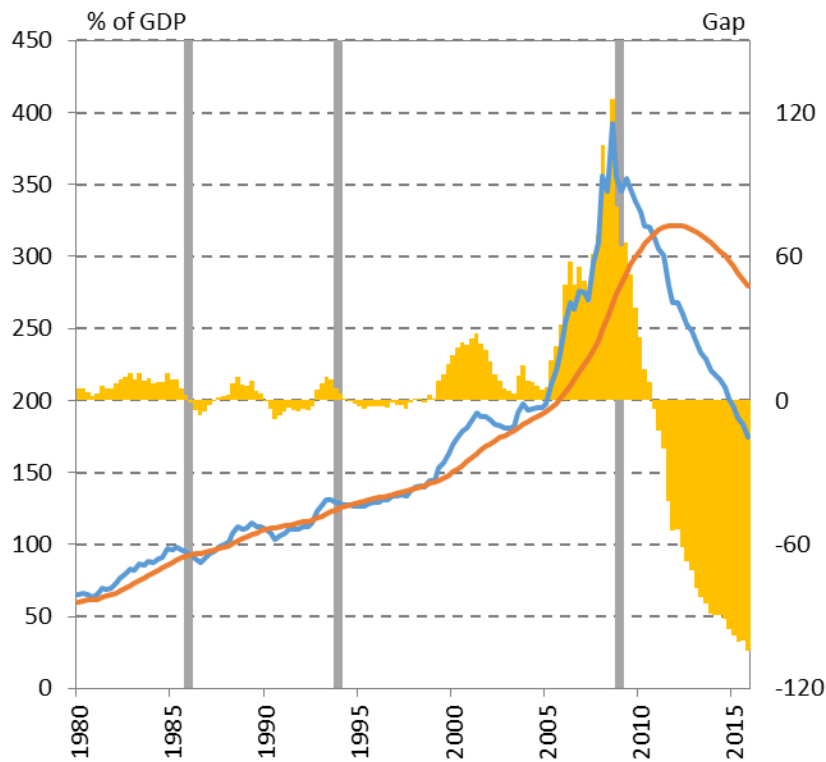
Finland



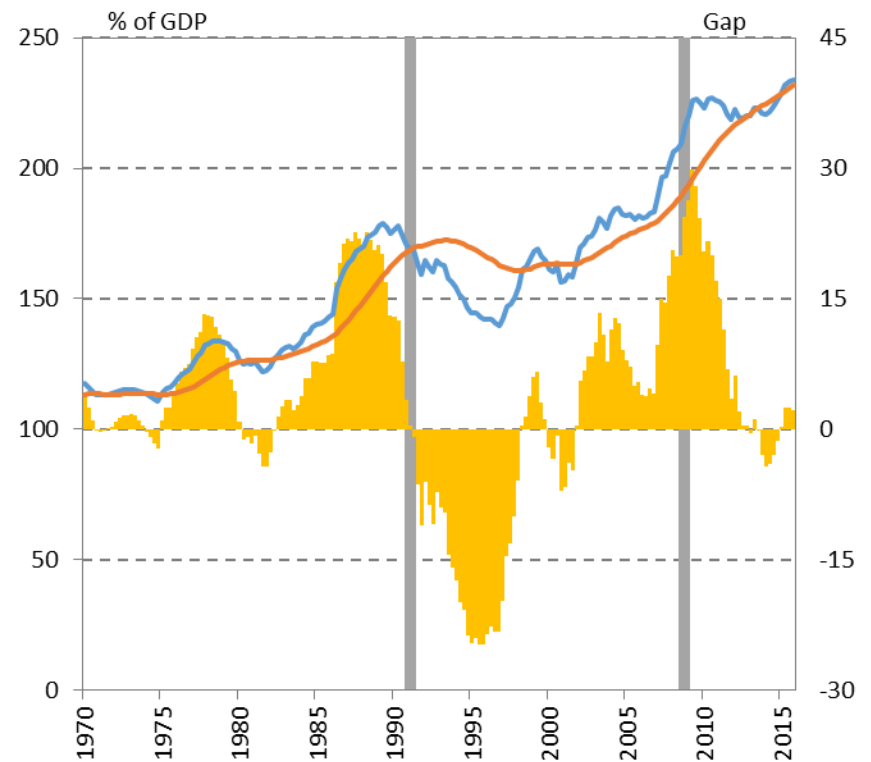
Credit-to-GDP gap



Iceland



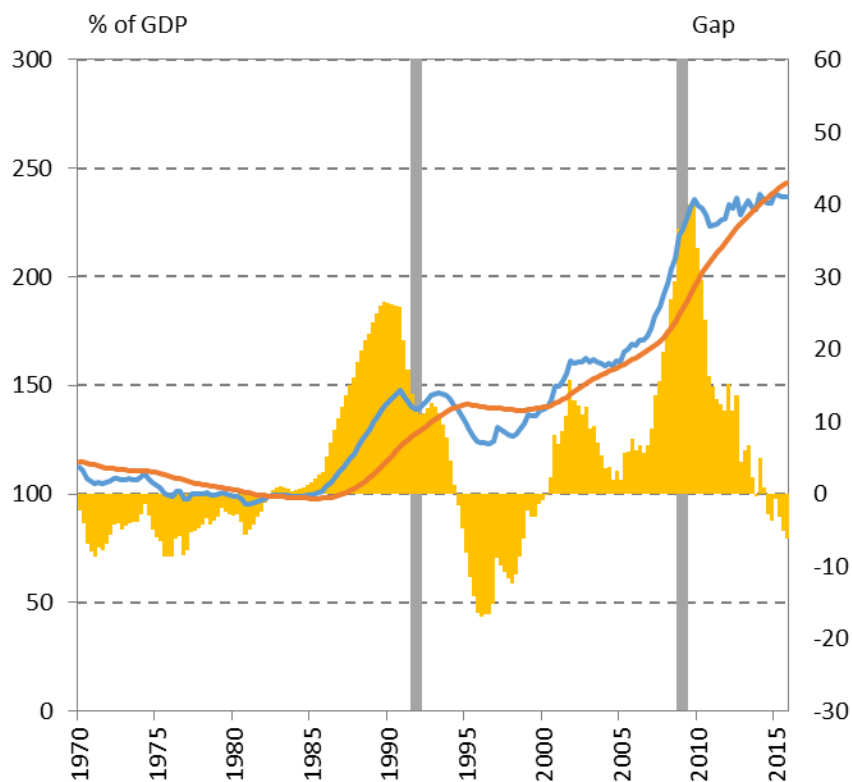
Norway



Credit-to-GDP gap



Sweden



Number of

Total: 10

- crisis with CCB active

9

- CCB active but no crisis

9

- crisis with 2,5% CCB

4

Time (quarters) from

Average

- maximum to crisis

2

- first signal to crisis

22

Noise to signal ratio

3 year horizon

1,89

5 year horizon

0,68

7 year horizon

0,31

Evaluating the BCBS buffer guide for Nordic countries



- Following the BCBS buffer guide the CCB would have been active prior to all but one crisis in the sample.
- However, the 2,5% maximum would have taken effect only in four out of the ten cases.
- In addition, in nine cases the CCB would have been activated without a crisis emerging.
- In spite of good performance from cross country research the credit-to-GDP gap would have provided an unstable signal for the Nordic countries in the past 40 years.



3. DEFINING AND ESTIMATING THE FINANCIAL CYCLE

Financial cycle



- No clear definition yet.
- Connected to the credit cycle.
- Cyclical phenomenon with a lower frequency than the business cycle.
- Best captured by the joint behaviour of medium term cycles in credit and property prices.
 - Average duration is 16 years.
 - Peaks are closely associated with systemic banking crisis.

Financial cycle in recent literature



- The financial cycle is estimated by aggregating medium term cycles of multiple variables.
- Medium term cycles are estimated by applying the Christiano & Fitzgerald (2003) asymmetric band-pass filter with duration 8 to 30 years.
- Drehmann et al (2012) use the average of variables cycles for aggregation.
- Einarsson et al (2016) use principal component analysis (PCA) for aggregation.
 - PCA is commonly used to estimate the business cycle (Burley, 1971).

The financial cycle in our study



1. Historical representation of the financial cycle
 - Medium term cycles found with band-pass filter.
 - PCA used to create a single financial cycle.

 2. Early warning representation of the financial cycle
 - Medium term cycles found with one-sided HP-filter.
 - PCA used to create a single financial cycle.
- The study suggests an activation guide for the CCB by building up the CCB during a steady upswing.

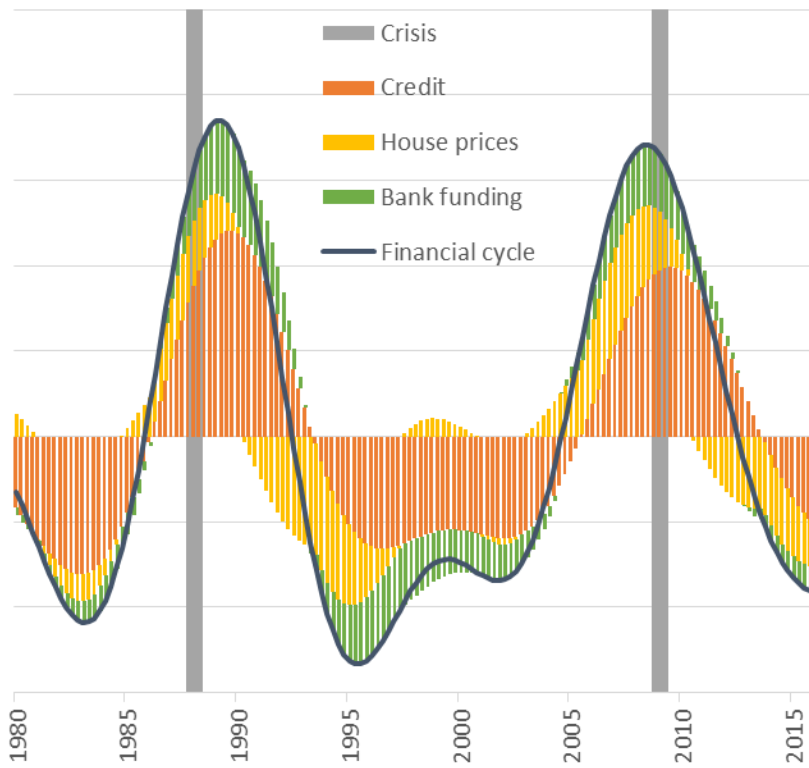


4. THE FINANCIAL CYCLE OF THE NORDIC COUNTRIES

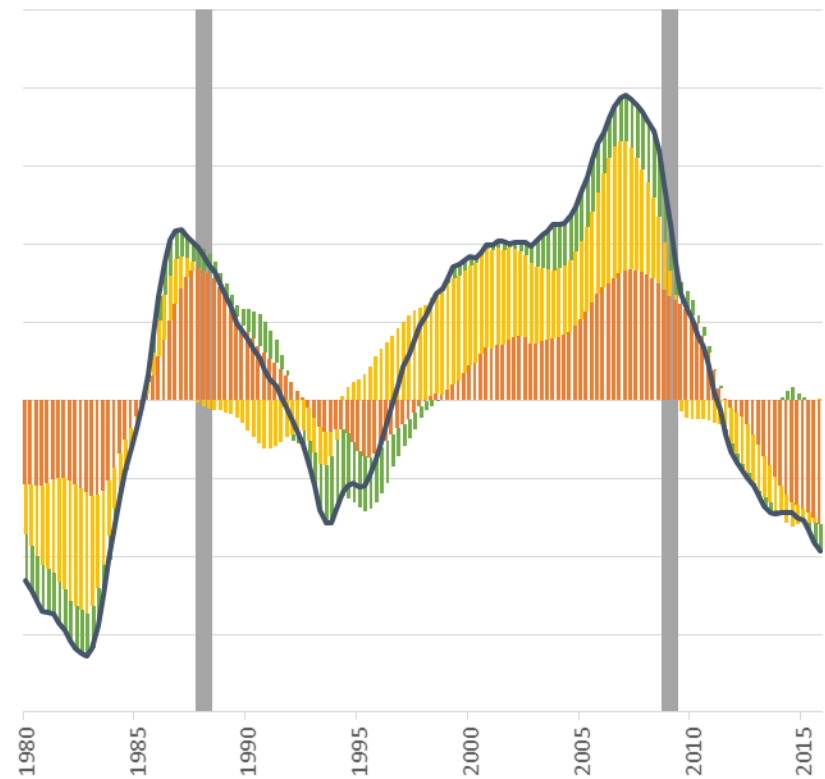
Denmark



Band-pass filter



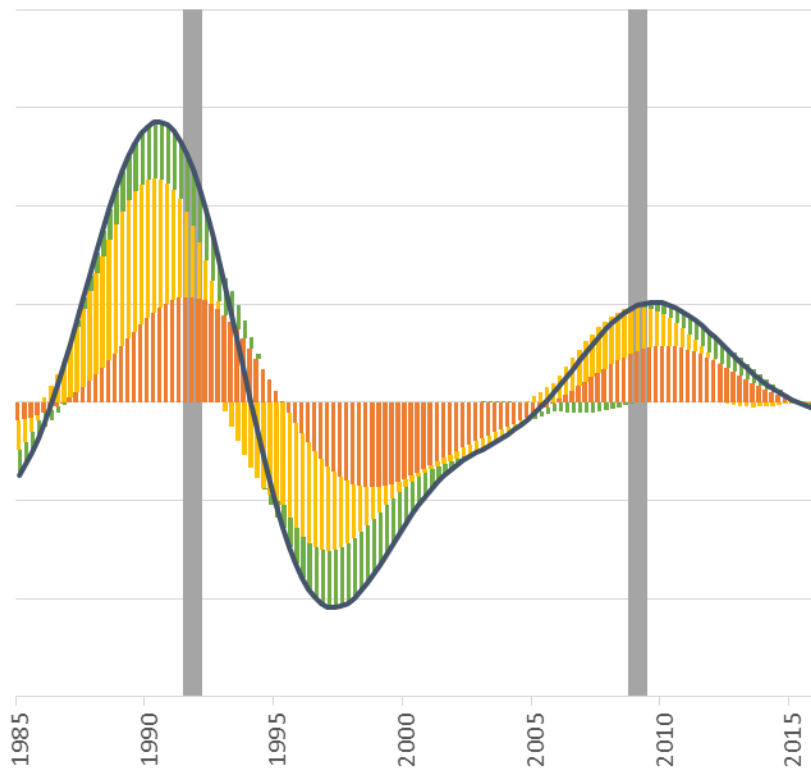
One-sided HP-filter



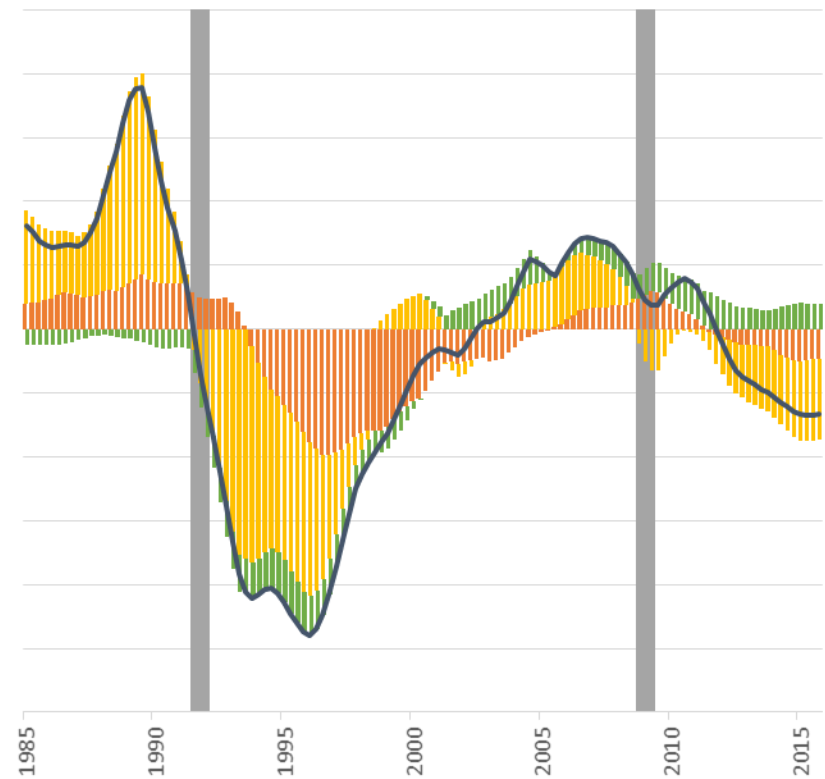
Finland



Band-pass filter



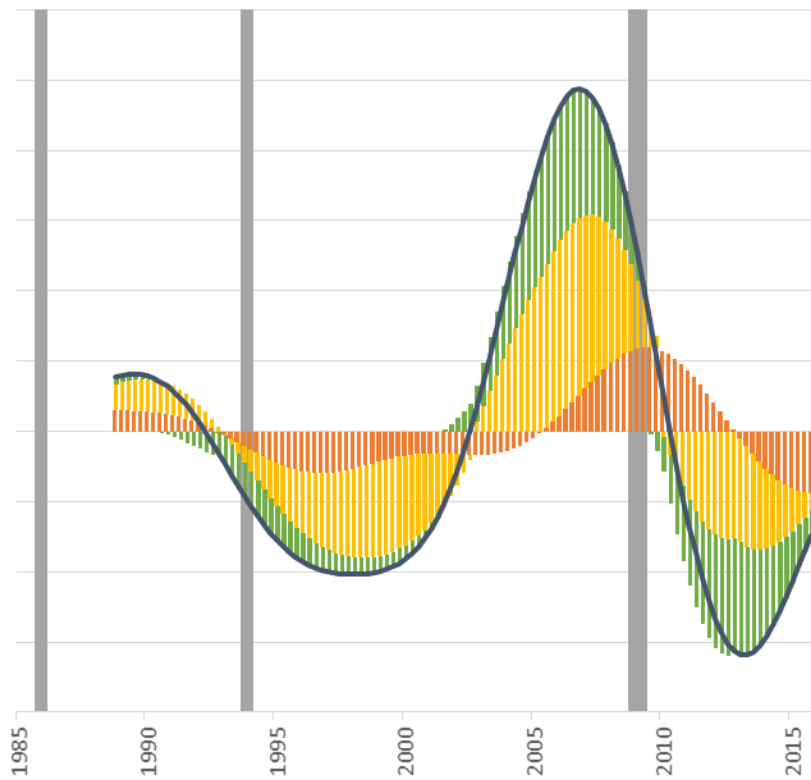
One-sided HP-filter



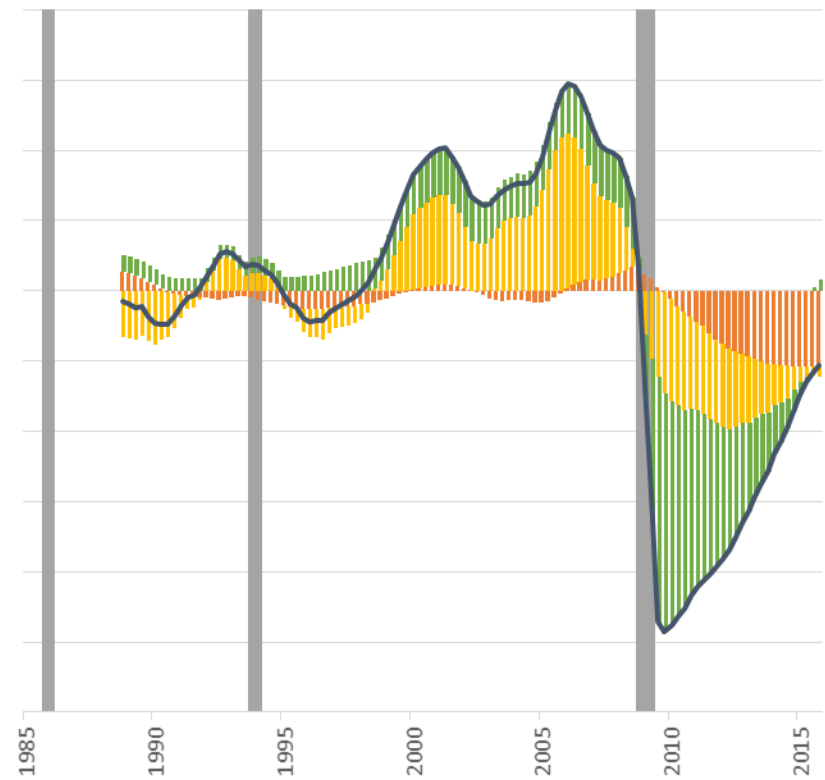
Iceland



Band-pass filter



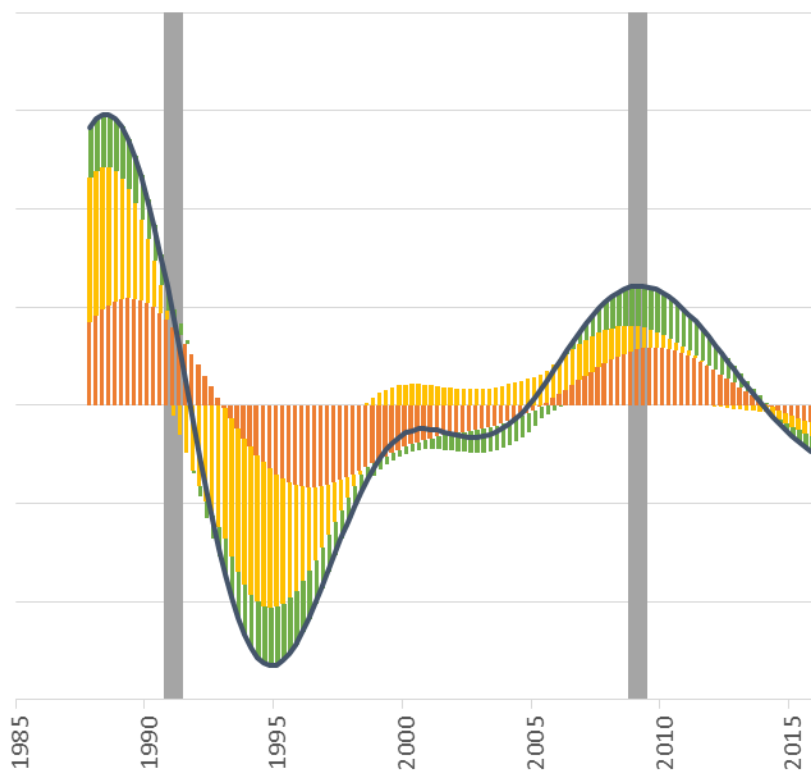
One-sided HP-filter



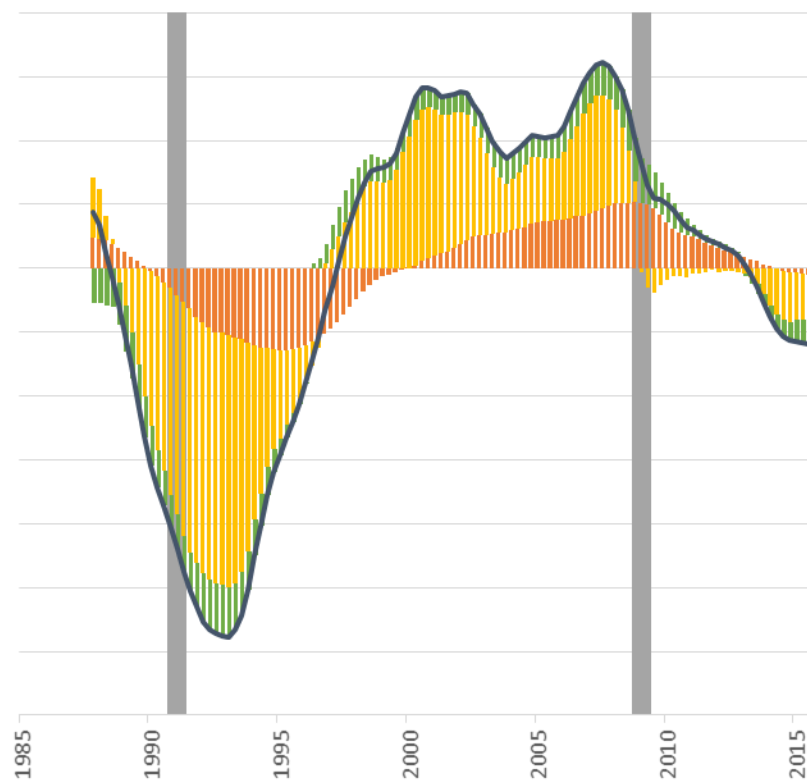
Norway



Band-pass filter



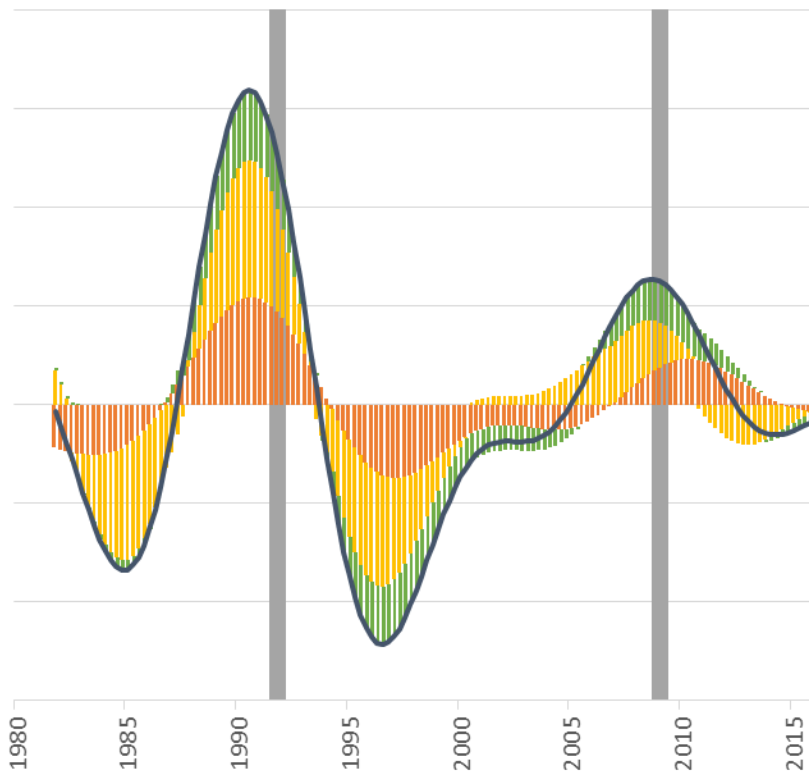
One-sided HP-filter



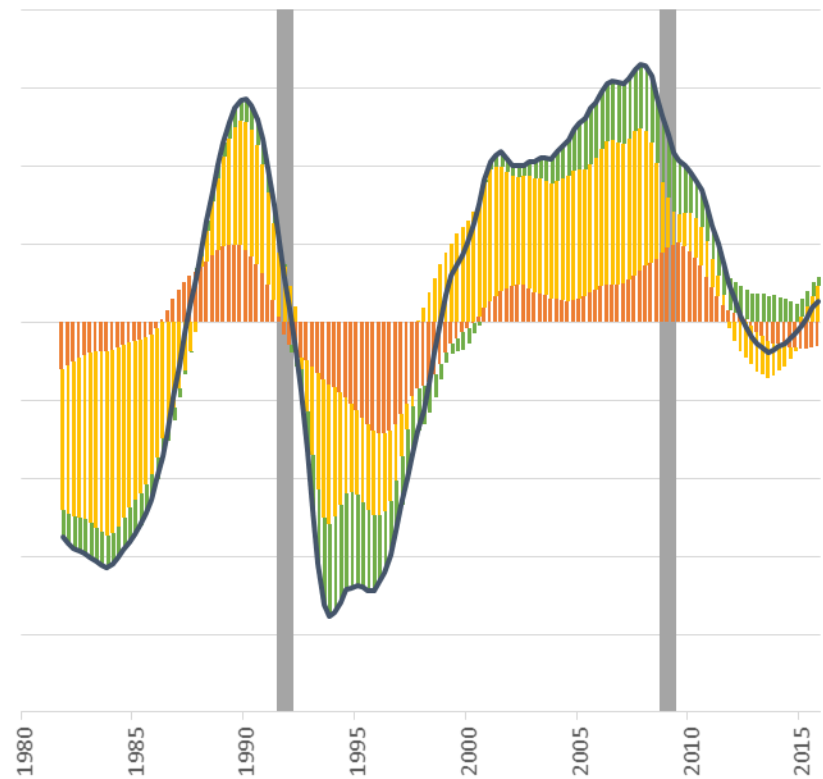
Sweden



Band-pass filter



One-sided HP-filter



Historical financial cycle - results



- Stock prices did not show correlation with other variables of the financial cycle.
- Financial cycle tops out on average three quarters prior to crisis.
 - Housing price component is leading.
 - Credit component is magnifying.
- The duration of the financial cycle is just over fifteen years.
 - Gives on average five years for building up the CCB.

EWI financial cycle - results



- The early warning representation gives a more unstable signal but keeps the major characteristics of the historical representation.
 - Duration just over 18 years.
 - Tops out five quarters prior to crisis.
 - House prices leading.
 - On average over five years of upswing to be used for build up of the CCB.



5. DISCUSSION

Discussion



- The data sample used is small
 - Data for five countries over four decades.
- The estimate of the financial cycle relies highly on the input data chosen.
- Shocks in the series can affect the filters.
- Credit component has a modest share in Icelandic financial cycle.
 - Is more lagging than for the other countries.

Discussion



- In praxis six quarters is the minimum period needed for a signal of CCB activation before a crisis onset.
- The average length of the financial cycle gives around five years for the build up of the CCB.
- Research indicate that the benefits of early activation may exceed the cost of unnecessarily high capital requirements over limited time periods.



6. CONCLUSION

Conclusion



- The BCBS buffer guide is not a good guide for setting the CCB in the Nordic countries.
- The historical financial cycle presented here adds information on the CCB timeframe and leading indicators.
- The early warning financial cycle is a potential indicator to be used in the decision process for the CCB.



THANK YOU