Forecast Accuracy and Efficiency at the Bank of England – and how errors can be leveraged to do better

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Transforming Monetary Policy

How we should think about uncertainty and risks?

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Summary

Kanngiesser and Willems (2025: KW)

Evaluate MPC forecasts (2011 onwards). Findings:

- Unbiased inflation forecasts, more accurate than simple alternatives
- Overpredict real wage growth, unemployment rate and real GDP
- Inflation forecasts are not fully efficient:
  - Pass through from real wage growth to inflation may be bigger than accounted for in forecasts
  - Real GDP growth has faster inflationary impact than forecasts expect
  - Real interest rate has larger effect on reducing inflation than forecasts suggest but less impact on unemployment/real wage growth in SR

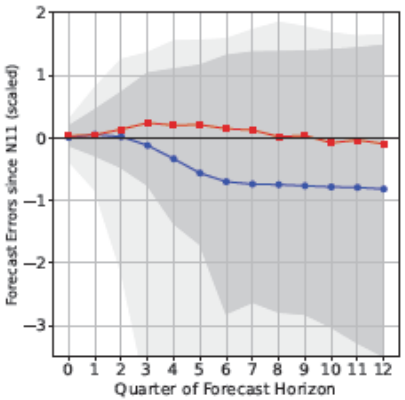
Excellent paper which makes my job difficult!

I'll focus on where I think efforts should be concentrated, therefore not a critique to KW, but rather complementary.

Impressive forecast performance!

AVERAGE FORECAST ERRORS

(A) INFLATION



ROOT MEAN AND MEDIAN SQUARED ERRORS

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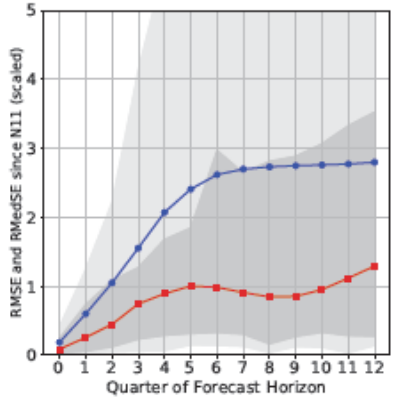

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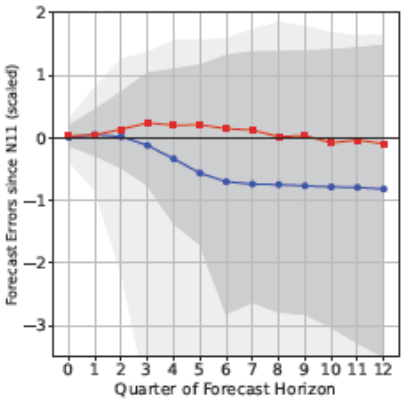

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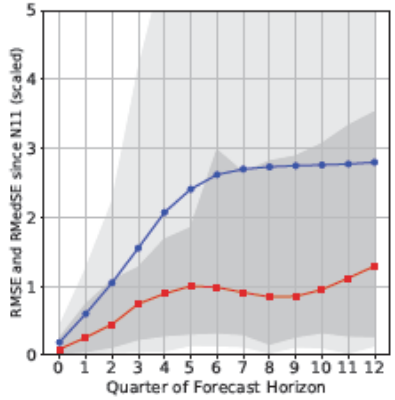

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BUT

The gap between median and mean forecast performance highlights that where 'outliers' occur forecasting is difficult.
Unsurprising: But forecasts struggle precisely when accurate forecasts are needed.
Focus on improving forecasting during **structural breaks**.

When forecasts go wrong

Theory of forecasting well established when forecasting model coincides with stationary data generating process: conditional expectation is unbiased and minimum MSFE.

Not useful in real world where unknown DGP is non-stationary.

Main cause of forecast failure is shifting equilibrium

If distribution shifts, any model that is equilibrium correcting will converge to wrong mean.

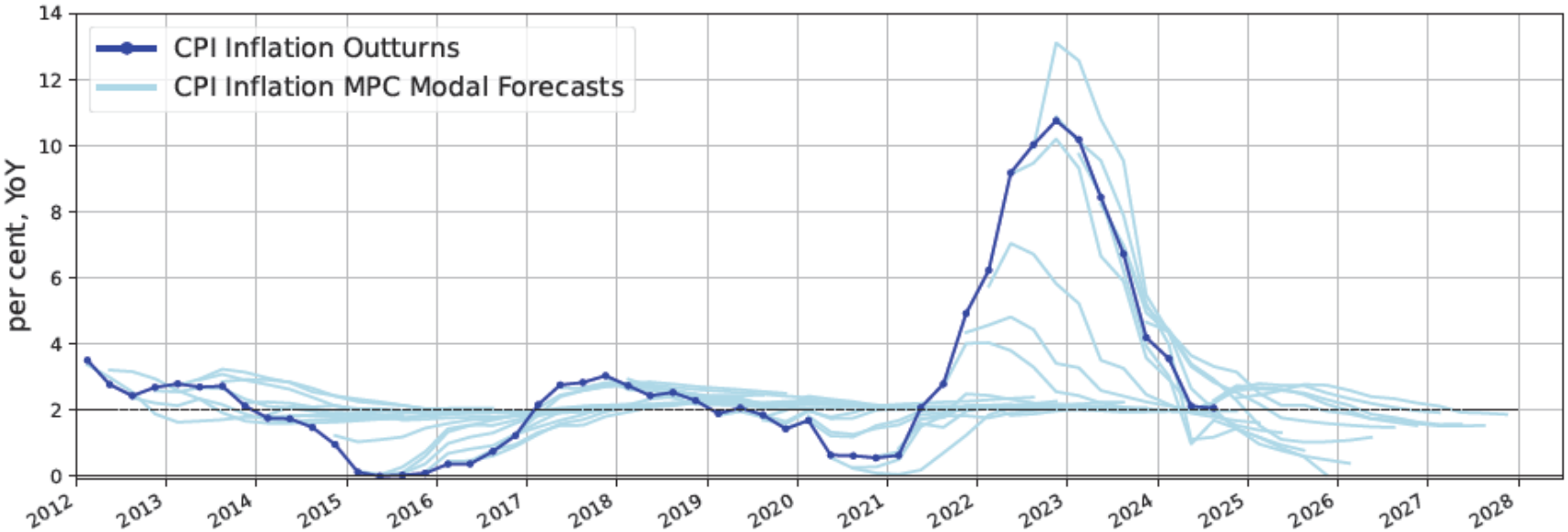
If structural change is inherently unpredictable then forecast mistakes occur.

But **systematic forecast mistakes** should not occur as information set can be rapidly updated.

If forecasts look like hedgehogs $\Rightarrow$ forecast failure.

MPC inflation forecasts

FIGURE 1: UK CPI INFLATION, YEAR-ON-YEAR



Notes: The solid blue line depicts the UK CPI inflation outturns. The light blue lines depict the CPI modal inflation forecasts. The depicted outturns in the blue line refer to the outturns $k = 12$ quarters after the first data release. For the last 12 quarters we take the latest available vintage.

MPC inflation forecasts

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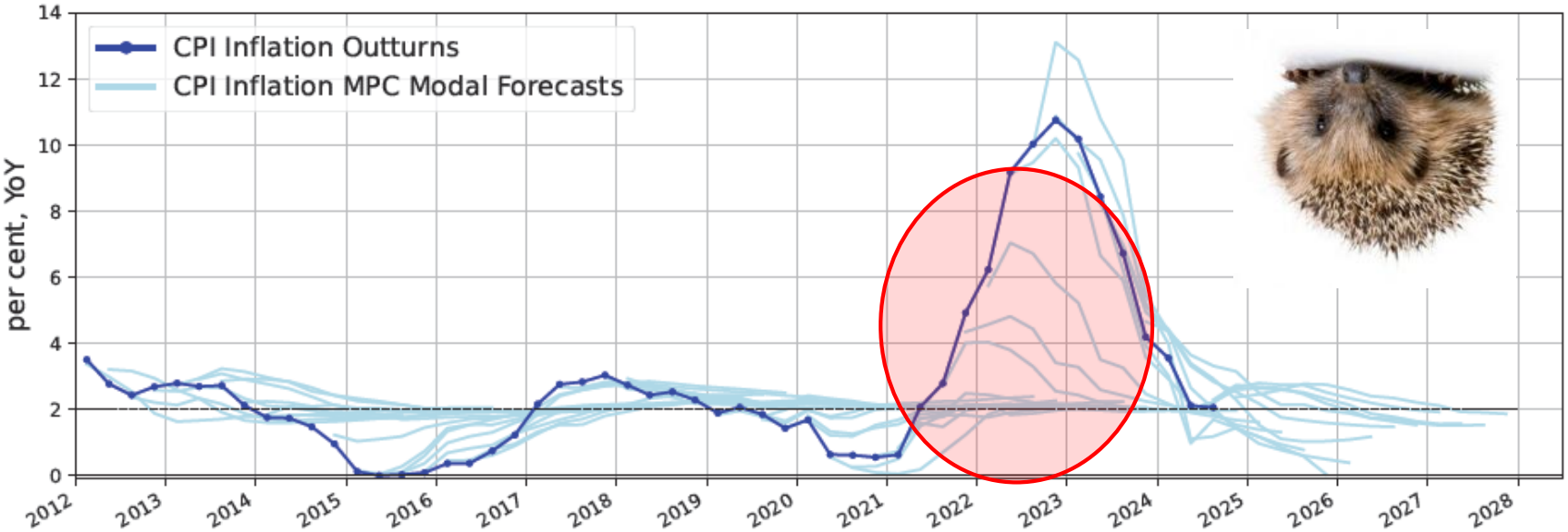

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Tension between robust models and anchoring inflation expectations

Anchoring inflation expectations

"The MPC may have (unspoken) limits on the extent to which it is willing to publish a deviation of inflation from target at medium-term horizons, perhaps out of a concern for the possibility of contributing to an unwelcome shift in expectations." (KW, p.5)

Anchoring forces the forecast process to be equilibrium correcting. Tension between forecasting models that are adaptive to structural breaks (the class of robust models) and those with inbuilt equilibrium.

Results in hedgehog forecasts where all paths point in same direction and can't adapt to shifts.

What can be done?

The gains from improving forecasts over quiescent periods will be marginal on policy decisions.

But forecasting during periods of structural break is the key to forecast success—**incredibly difficult!**

If the structural breaks are unpredictable very little one can do, but...

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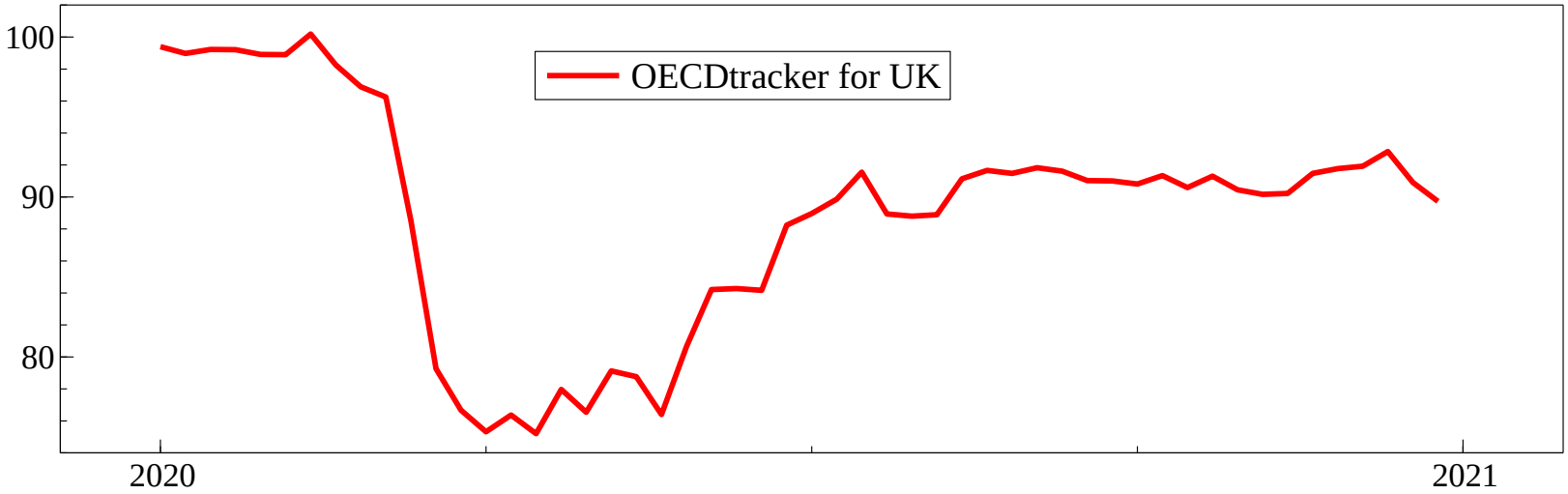
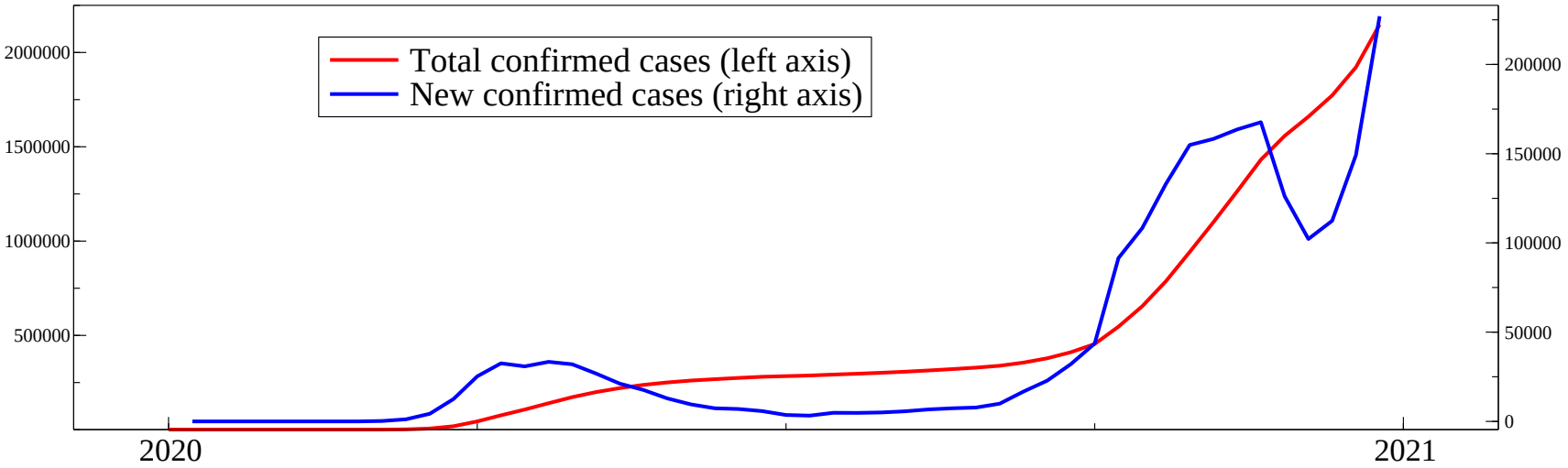
1. All breaks have a cause so there may be scope to forecast breaks
   - Covid-19 pandemic was causal in GDP decline
   - Approach requires two information sets.
     One economics: regular forces from agents' behaviour
     Other explains causes of sudden shifts (politics/pandemics/wars etc.)
2. If that fails, adapt more rapidly when structural breaks arise
   - Russian invasion of Ukraine was unanticipated shock to energy prices

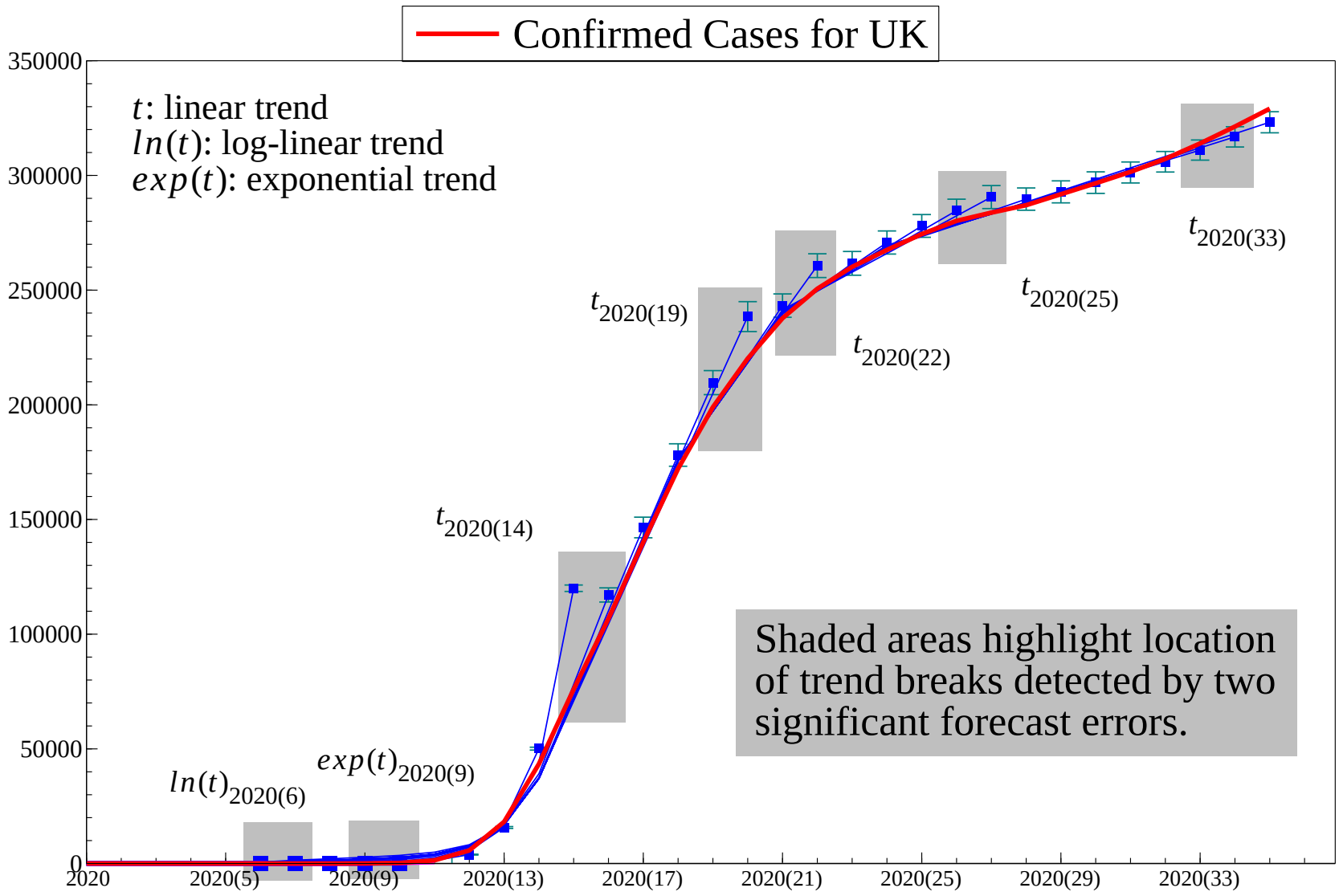
OECD weekly tracker for UK & Covid cases

Can Covid data improve forecasts of economic activity?

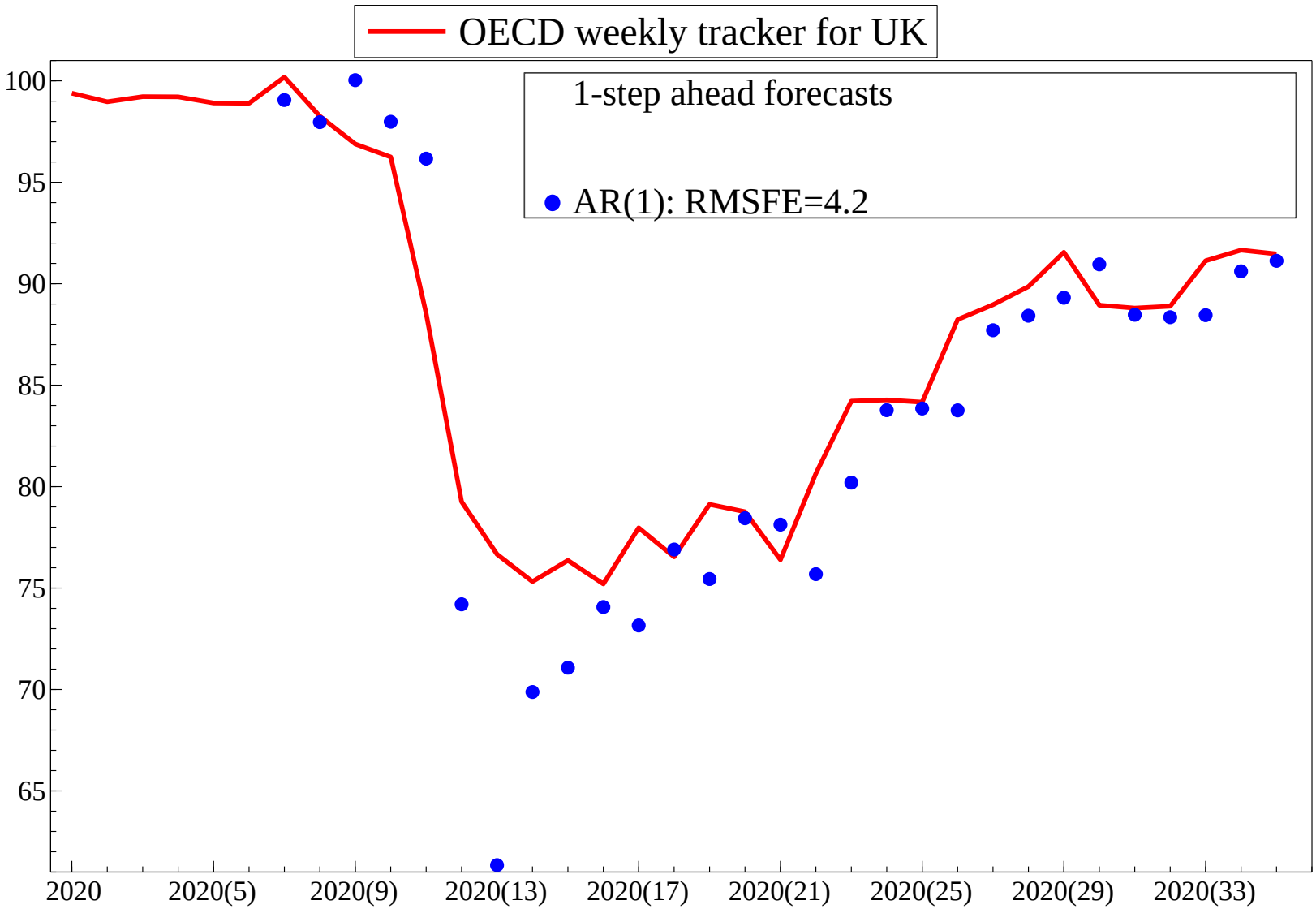




Detecting breaks in Covid data in real time



Recursively estimate economic activity model adding breaks detected by Covid



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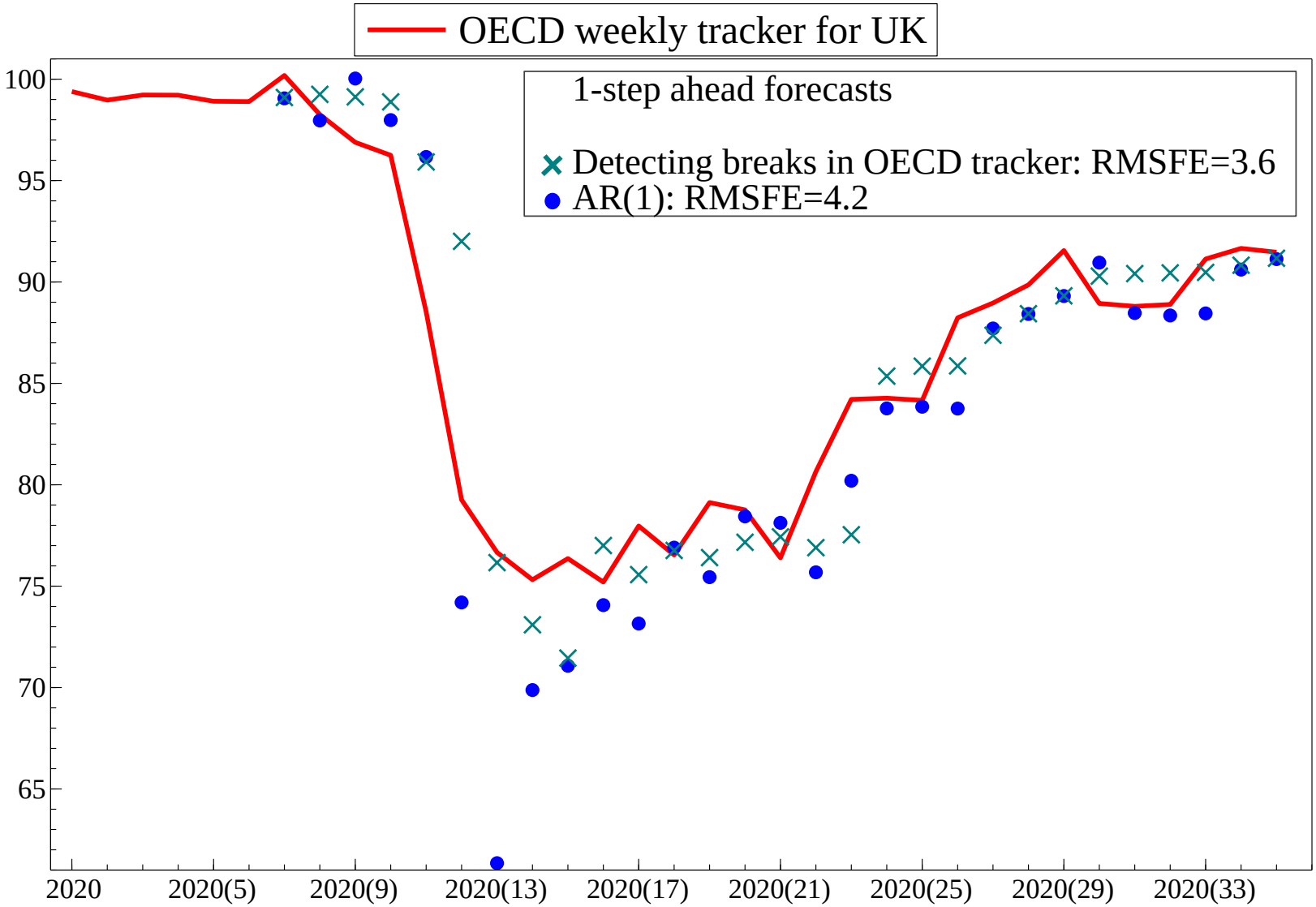

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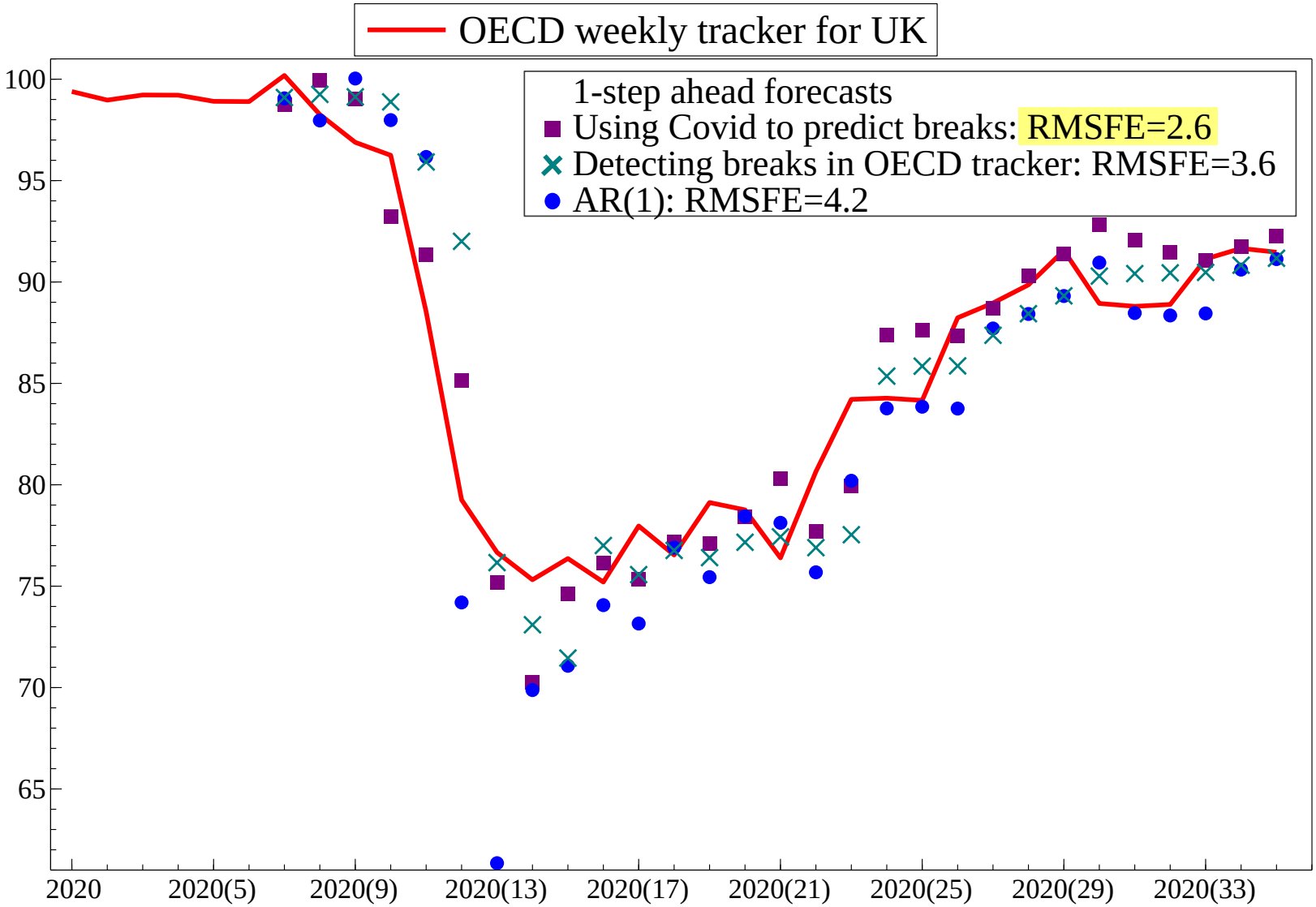
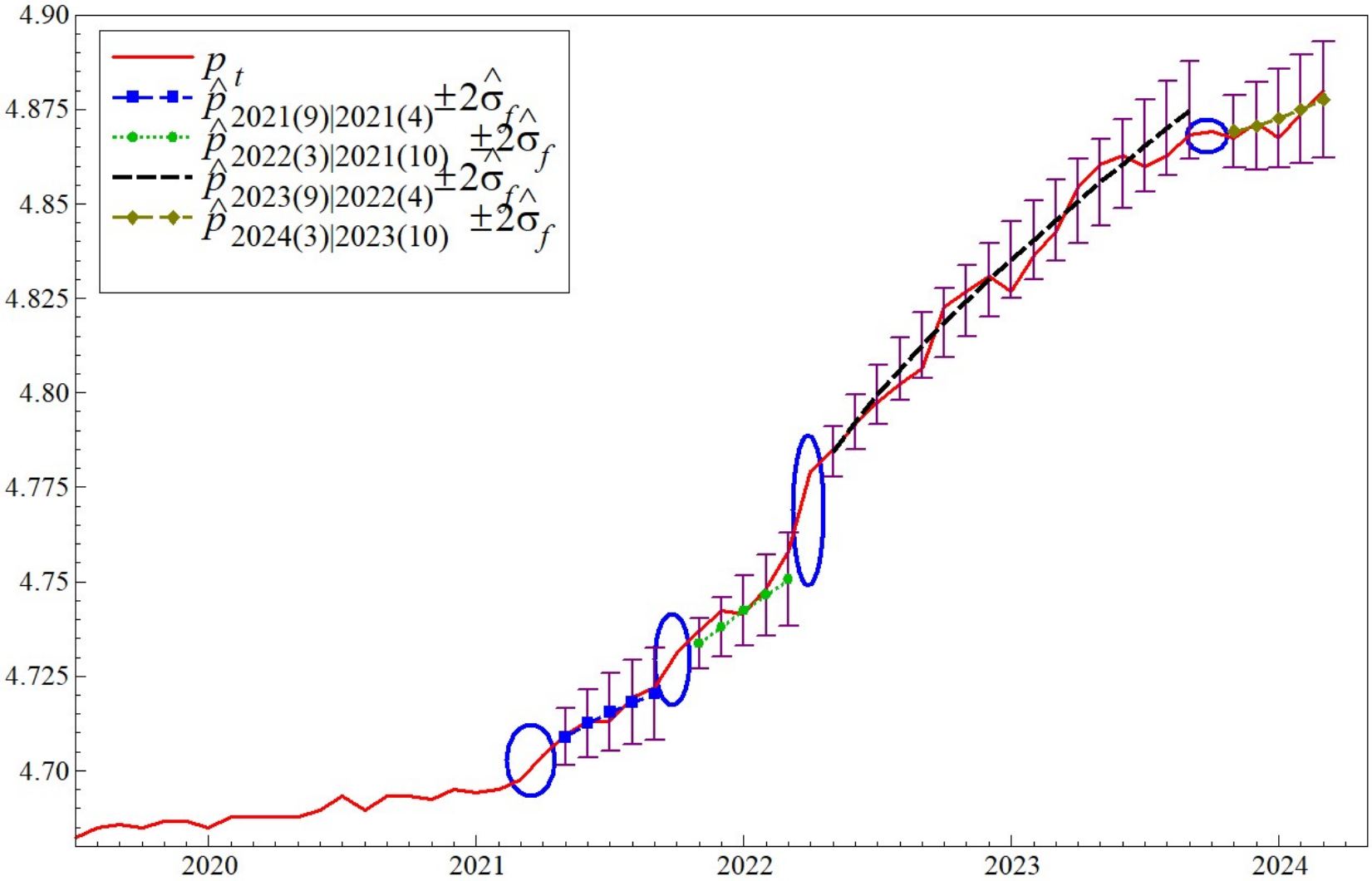


Can we adapt more rapidly to unanticipated structural breaks?

- KW show energy price growth a key driver of inflation forecast errors (Appendix B).
- Shifts in energy prices essentially unpredictable, leading to sequence of large same-sign one-step-ahead forecast errors as the forecast origin advances.
- Detecting breaks in real-time and updating forecasts can avoid systematic forecast errors after breaks occur.

Useful to run a set of robust forecasting models alongside the MPC forecast process to quickly detect 'tipping points' at the start of their evolution, acting both as an early-warning system and providing a glimpse of the road ahead.
Assist in MPC judgement?

Sequences of multi-step ahead forecasts for UK CPIH detecting trend breaks recursively

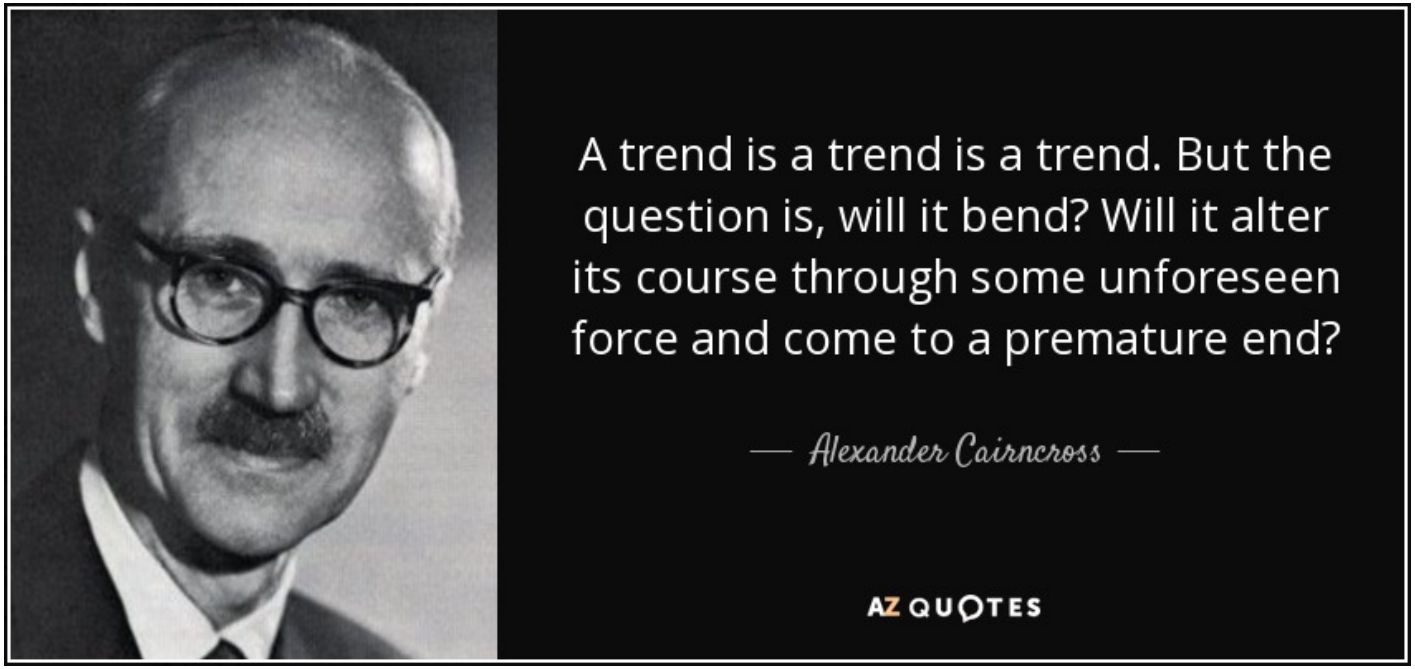


Forecast efficiency

- Blanchard and Leigh (2013: BL) methodology is a nice technique, akin to forecast encompassing.
- Puts the emphasis on information sets which is critical—could incorporate second information set which drives structural breaks in this set-up.
- The use of robust regression estimation downweights the break periods, which is just when information from other forecasts may not be accounted for. E.g., if other forecasts are leading indicators of breaks for inflation forecasts.
- Focusing the method over the 'outliers' periods could reveal useful information.

Conclusions

- **Really interesting and elegant paper**
- Provides the Bank with key insights into MPC forecast performance
- Would be useful to automate the evaluation methodology and run in real-time
  - Continuous assessment to inform policy-makers on forecast biases and inefficiencies
  - Mis-forecasting should not damage credibility if the shocks are unanticipated
- Would be nice to quantify the implications of the forecast efficiency results for future forecasts
  - Difficult as the forecasts are due to a process rather than a specific model, but you could reverse engineer the forecasts to obtain what the forecasts would have been had efficiency applied (i.e. Wald ratio=0).


A trend is a trend is a trend. But the question is, will it bend? Will it alter its course through some unforeseen force and come to a premature end?
— Alexander Cairncross —
AZ QUOTES

Thank you!