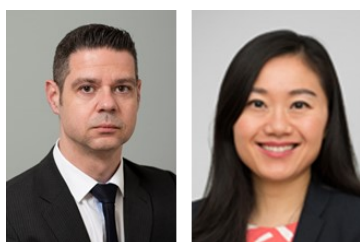


Quantitative forward guidance through interest rate projections*



By Boris Hofmann and Dora Xia, Bank for International Settlements (BIS)

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We assess quantitative forward guidance through interest rate projections along four key dimensions: (i) predictability, (ii) credibility, (iii) redundancy and (iv) consistency, based on data for the Reserve Bank of New Zealand, the Norges Bank, the Sveriges Riksbank and the Federal Reserve. We find that market expectations of the future path of interest rates predict changes in the central bank projection path, but far from fully; and market expectations adjust to path surprises after its release, but far from a one-to-one basis. We further find that central bank interest rate projections are not redundant as they impact market expectations also when controlling for the effects of central bank macro projections that are released in parallel. Finally, the interest rate projections are consistent with the macro projections as they are empirically linked by a stabilising Taylor rule.

*Authors' note: This SUERF Policy Brief summarizes Hofmann and Xia (2022). The views expressed in this study reflect those of authors and are not necessarily those of the Bank for International Settlements.

Introduction

Forward guidance on the future path of policy rates has become a key element of central banks' monetary policy toolbox over the past decade. While the overwhelming majority of central bank governors and academics think that forward guidance should continue being part of central banks' toolkit going forward, there is much less agreement on how forward guidance should be implemented in practice, in particular whether guidance should be of qualitative or quantitative nature (Ehrmann et al 2019).

Against this background, this paper analyses quantitative forward guidance through the publication of central bank interest rate projections. The standard practice amongst central banks has been to provide qualitative forward guidance via projections of their main target variables (mainly inflation and real economic activity) and verbal communication of policy assessments and intentions in policy decision statements, press conferences and speeches. A few inflation-targeting central banks have gone one step further and provide quantitative forward guidance by publishing their own projection of the future path of policy rates. In particular, the Reserve Bank of New Zealand (RBNZ) introduced interest rate projections in 1997, the Norges Bank in 2005, the Sveriges Riksbank in 2007, and the Federal Reserve in 2012. In the case of the Federal Reserve, its policy rate projections as part of the Survey of Economic Projections (SEP), referred to as the "dot plot", has become one of the most closely watched news releases amongst investors.

Based on the experiences of these four central banks, this paper assesses quantitative forward guidance through interest rate projections along four key dimensions: (i) predictability, (ii) credibility, (iii) redundancy and (iv) consistency.

Predictably and credibility

The predictability and the credibility of central banks' interest rate paths refer to the extent to which markets respectively have anticipated the path and adjust to the path after its publication. Svensson (2015) argues that, ideally, central banks should be so predictable that the policy rate path priced in by markets the day before the release of the new central bank policy rate path already reflects to a large extent the to-be-published path. At the same time, monetary policy should be so credible that market expectations of the future policy rate path align with the newly announced path. However, Morris and Shin (2018) suggest that financial market functioning may be impaired by the circular flow between market prices and central bank forecasts. Market prices, which place a dominant weight on public forecasts, would be less informative when central banks take cues from markets in formulating their forecasts. Our empirical evaluation of predictability and credibility sheds light on these issues.

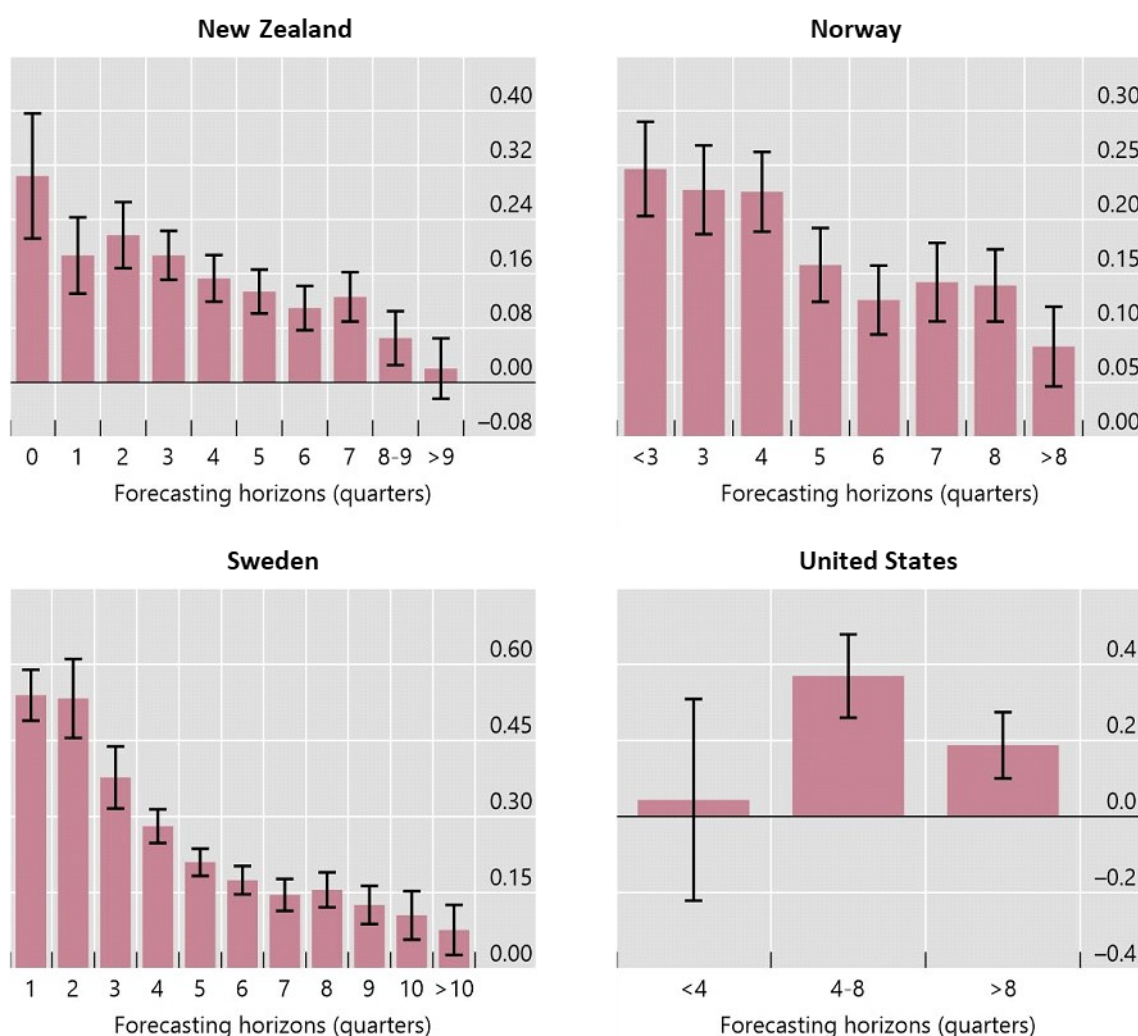
To gauge predictability of central bank interest rate paths, we examine to which extent central bank policy rate paths were reflected in market expectations on the day prior to their release. To this end, we model the central bank policy rate paths as a weighted average of the market policy rate path on the day before its publication and the previous central bank policy rate path. The weight attached to the market expectations prevailing on the day prior to the release in newly released central bank interest rate projections can be used to gauge the degree of predictability.

We find that for all four central banks, policy rate forecasts are anticipated by markets to a significant but less than complete extent. For the Norges Bank, 75% of the variation in the new central bank policy rate path can be forecast by markets using public information on the day prior to the release. The new path largely reflects the market path on the day before the publication with the relative weight of 0.75. For the other three central banks, predictability is also high and statistically significant. Yet, their policy rate paths are predicted to a lesser extent (around 40-50%) and with a smaller weight on the market pricing (between 0.3-0.5).

To gauge the credibility of the central bank paths, we evaluate how markets expectations adjust to surprises in newly announced path. We find that surprises in the four central banks' policy rate projections move the market path in a statistically significant but quantitatively limited way. The pass through of a policy rate path surprise is positive and statistically significant. But the magnitudes are small - around 0.1-0.2. The policy path surprises contribute 5-30% to the overall variation in markets' repricing. The far less than complete pass through from central bank path surprises to market paths on the one hand suggests limited credibility, but on the other hand implies little evidence of impairment of independent price discovery in markets by the release of a central bank interest rate path.

Predictability and credibility are not invariant to the length of forecast horizons. We find that predictability and credibility both decline as the forecast horizon lengthens (Figure 1). That said, also at longer forecast horizons beyond eight quarters ahead, both the predictability and the credibility of the central bank path remain statistically larger than zero in most cases.

Figure 1: Impact of central bank path surprises on market path



Note: the chart plots the weight attached to the market expectations prevailing on the day prior to the release in newly released central bank interest rate projections for different forecasting horizons.

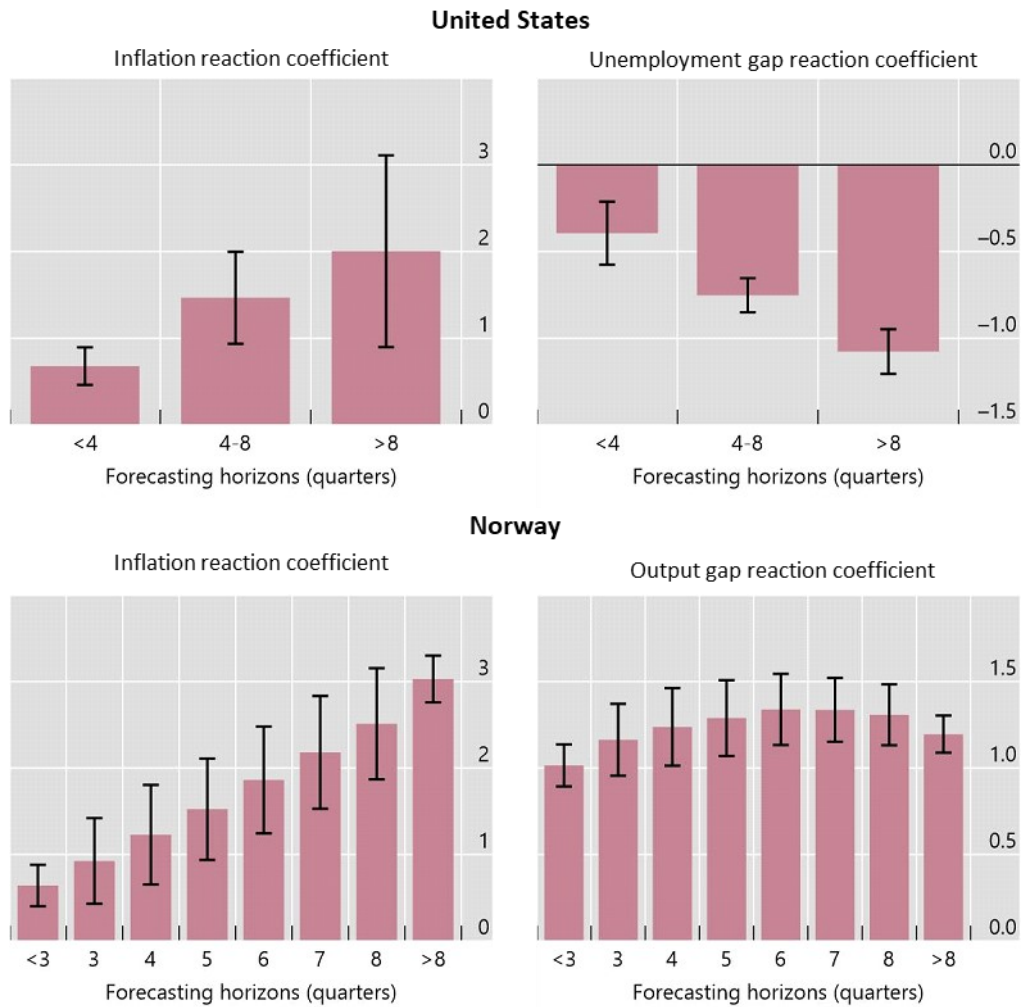
Redundancy and consistency

Redundancy and consistency refer to the relationship between central banks' policy rate projections and their macroeconomic forecasts. In addition to policy rate projections, central banks also release forecasts for key macroeconomic variables, e.g. inflation, unemployment, GDP growth and the output gap. In fact, the publication of macro forecasts is generally a common practice among central banks, as opposed to publishing interest rate projections which is pursued only by few central banks.

Two natural questions emerge when central banks publish both policy rate and macroeconomic projections. First, do the interest rate projections provide information beyond the macroeconomic forecasts (redundancy)? Second, are the interest rate projections consistent with the macroeconomic forecasts (consistency)? On the one hand, the interest rate projections should not be fully spanned by the macro forecasts as they would otherwise be redundant in terms of information content for the public. On the other hand, the interest rate projections should be consistent with the macroeconomic forecasts in the sense that the two should be linked by a meaningful monetary policy reaction function. This would help the central bank to reinforce the public's perception that its reaction function is consistent with its mandate.

Since it is more common among central banks to publish macro forecasts, the natural question is whether publishing the macro forecasts would be sufficient to guide market expectations. Put differently, is publishing the policy rate projection redundant taking into account the information content of the macro forecasts? To answer this question, we examine the impact of policy rate projections on the market expectations controlling for the central bank macro forecasts. We find that the policy rate projections remain significant. By contrast, the macro forecasts are insignificant in most cases, suggesting that their information content for market expectations is dominated by that of the policy rate projections. Quantitatively, the estimated impacts of the path surprises also do not change materially compared to those estimated from models without macro forecasts, except for New Zealand, where the coefficient more than halves.

In order to assess consistency, we estimate Taylor-type interest rate reaction functions relating policy rate projections and macroeconomic projections. We focus our analysis on the Norges Bank and the Federal Reserve as these central banks consistently release output/unemployment gap forecasts, providing measures of forecast economic slack that are needed for the estimation of Taylor rules. Our results suggest that there exists a significant link between the policy rate and the macro projections consistent with a Taylor-type reaction function. In both the case of Norges Bank and of the Federal Reserve, macro projections explain around 70% of the variation in policy rate projections. At the same time, the estimated interest rate projection reaction functions are consistent with a stabilizing Taylor-type rules. A higher output gap or lower unemployment gap and a higher inflation forecast correspond to higher policy rate projections. In particular, policy rate projections rise more than one-for-one with inflation projections, so that the projection reaction functions are consistent with the Taylor principle that interest rates should rise more than proportional with the inflation rate. This is the case also in a statistically significant way in the case of Norges Bank, but not in the case of the Federal Reserve.

Figure 2: Interest rate projection reaction functions

Note: the chart plots estimated coefficients in Taylor-type interest rate reaction functions relating policy rate projections and macroeconomic projections.

Concluding remarks

Based on data for the Reserve Bank of New Zealand, the Norges Bank, the Sveriges Riksbank and the Federal Reserve we find that the interest rate projections released by these four central banks are predictable and credible albeit to a limited extent. Market expectations of the future path of interest rates anticipate changes in the central bank projection path, but far from fully. And market expectations adjust to path surprises, but at a rather small scale far from one-to-one.

We further find that interest rate projections are not redundant as they impact market expectations also when controlling for the effects of macro projections. Finally, interest rate projections are consistent with central bank macro projections as these projections are empirically linked by a stabilising Taylor rule.

Overall, these findings suggest that quantitative forward guidance through interest rate projections is effective along the dimensions considered by our analysis, but that it also faces limitations. ■

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About the authors

Boris Hofmann is a research adviser at the Monetary and Economic Department of Bank for International Settlements (BIS). He first joined the BIS in February 2011. Before taking up his current assignment in 2018, he was Senior/Principal Economist in the BIS's Monetary Policy Unit. Prior to joining the BIS, he was Senior/Principal Economist in the ECB's Monetary Policy Strategy Division (2006-11), Economist in the Economics Department of the Deutsche Bundesbank (2003-06) and Research Officer at the Centre for European Integration Studies of the University of Bonn (1999-2003). He holds a PhD from the University of Bonn.

Dora Xia is a senior economist at the Monetary and Economic Department of Bank for International Settlements (BIS). She joined the BIS in 2016 after working two years for Merrill Lynch Global Rates and Currencies Research as a strategist. She holds an MSc in physics and a PhD in economics from the University of California, San Diego.

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SUERF Secretariat
c/o OeNB
Otto-Wagner-Platz 3
A-1090 Vienna, Austria
Phone: +43-1-40420-7206
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