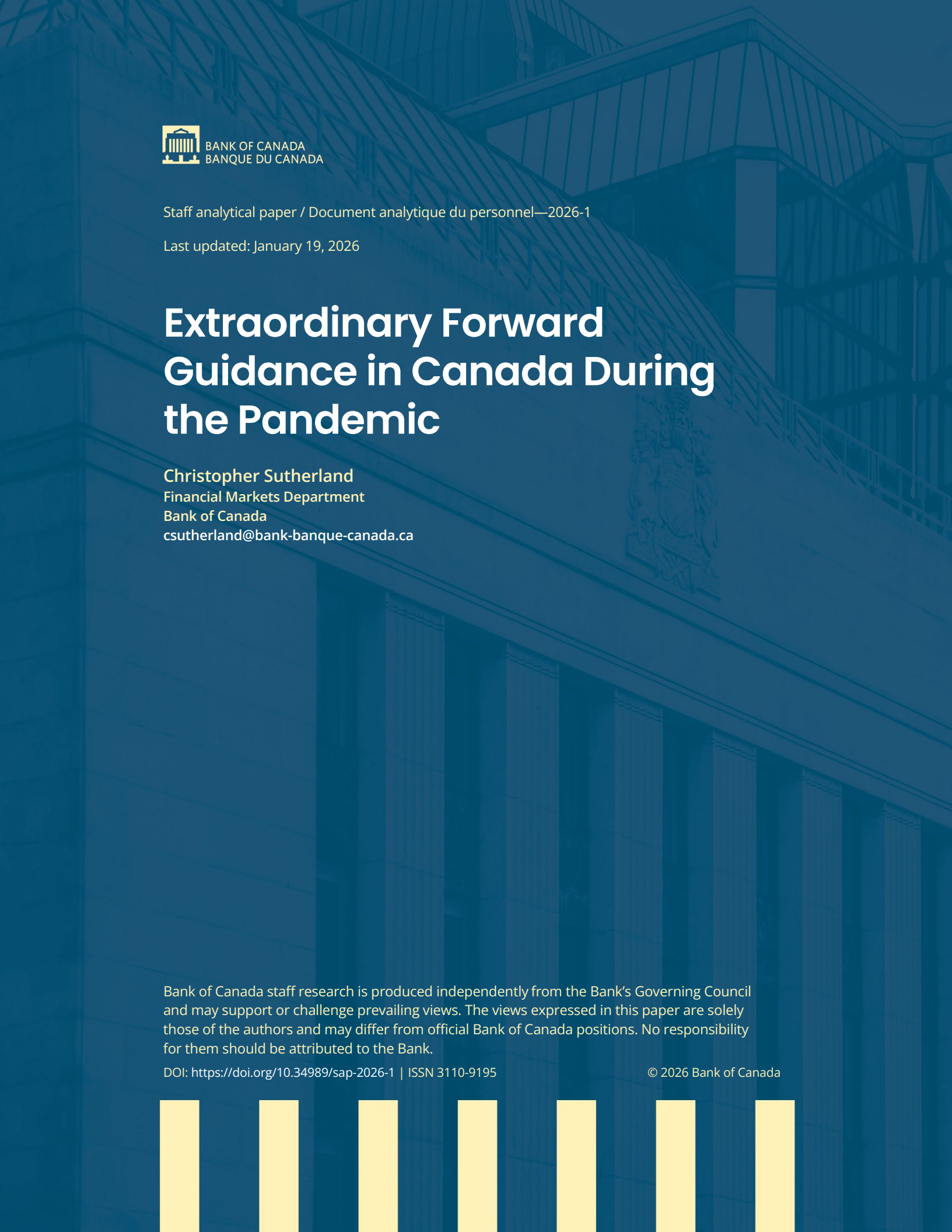

BANK OF CANADA
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Staff analytical paper / Document analytique du personnel—2026-1

Last updated: January 19, 2026

Extraordinary Forward Guidance in Canada During the Pandemic

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DOI: https://doi.org/10.34989/sap-2026-1 | ISSN 3110-9195

Executive summary

- We ask what lessons can be learned by reviewing the Bank of Canada's use of extraordinary forward guidance (EFG) from July 2020 to January 2022 (section 3). In doing so, we consider two trade-offs inherent to EFG (section 4 and section 5):
    1. The EFG potency vs. EFG flexibility trade-off, faced at the introduction of EFG.
    2. The potential *forward guidance (FG) credibility* vs. *inflation-targeting (IT) credibility* trade-off faced after the introduction of EFG, which would arise should initial central bank inflation projections ultimately underestimate future inflation.
- We argue that the form of the EFG used by the Bank of Canada balanced both trade-offs relatively well.
    1. It sent a strong forward policy signal yet also emphasized conditionality.
    2. Faced with substantial upward revisions to the inflation projection, the Bank adjusted its EFG, raising the policy rate earlier than initially projected.
- We draw three lessons from the pandemic EFG experience (section 5).
    1. EFG and unwind sequences announced in advance must be bounded. It must be clear from the beginning that, should the economic outlook shift substantially, the monetary policy outlook may also shift substantially.
    2. Monetary policy committees should condition the timing of removing EFG on a future economic state rather than on recent data, while emphasizing forecasting uncertainty.
    3. A systematic approach to FG in ordinary times would facilitate effective EFG in extraordinary times. By providing a policy rate projection accompanied by alternate policy rate path scenarios, monetary policy committees and the public could continuously learn how to communicate and process FG, respectively.

1 Introduction

In March 2020, as the COVID-19 pandemic rapidly worsened, inflation-targeting central banks around the world provided extraordinary monetary policy stimulus. Many of the advanced-economy central banks, including the Bank of Canada, cut policy rates quickly to the effective lower bound and used their extended monetary policy tool kits, such as quantitative easing (QE) and extraordinary forward guidance (EFG).

Following the pandemic, central banks were criticized for not having tightened monetary policy from ultra-accommodative stances early enough to mitigate the high inflation observed during 2022 and 2023. Much has been written about central banks having mistakenly projected that supply shocks would have a transitory impact on inflation.[1] More recently, some have partly attributed the delayed reaction to the inflation shock by most advanced-economy central banks to those central banks' use of EFG and their decision to sequence the wind-down (or so-called *tapering*) of QE before any policy rate increase could begin.[2]

The intent of EFG is to signal that the central bank will hold its policy rate at a low level—the effective lower bound (ELB)—for a longer period than might normally be the case implied by (the market's assessment of) the central bank's **reaction function**. A central bank reaction function is a formal or informal rule that describes how a central bank systematically adjusts its policy instruments in response to deviations of key macroeconomic variables from their equilibrium levels. Yet, this can generate a **time-inconsistency** issue for the central bank. That is, should substantial positive inflation shocks emerge before the conditions of exit from EFG are met, a central bank may have to trade off its commitment to keeping the policy rate at the ELB against its requirement to meet its inflation-targeting mandate. It is a trade off between preserving the (future) credibility of the central bank's EFG tool, which might be harmed by abandoning the commitment early, and maintaining the credibility of its inflation-fighting capacity. Some see the sharp rise in inflation following the COVID-19 crisis as the result of central banks—including the Bank of Canada—sticking to their EFG commitments too long instead of reacting to the rise in inflation.

In this paper, we analyze the Bank's EFG, particularly the commitment-based aspect, and gather lessons learned from its use during the COVID-19 period. First, we review what forward guidance (FG) is (section 2) and how it was used in Canada (section 3) and elsewhere (Appendix II). We then examine the conceptual considerations related to the trade-offs between sticking to the commitment come what may—to maintain the credibility of FG—and raising rates before the end of the commitment horizon has arrived (section 4).[3] Finally, we consider a variety of lessons learned from the use of EFG (section 5).

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[1] Moreover, as English, Forbes and Ubide (2024, 11) note: "Also importantly, central banks may have been slow to pivot because of the guidance they had provided regarding the likely timing of rate increases and duration of asset purchases."

[2] See, for, example, Eggertsson and Kohn (2023).

[3] That is, raising rates once it is judged that enough monetary stimulus has been provided and that inflation expectations have risen above target. This would be a form of time inconsistency.

2 Forward guidance: Ordinary and extraordinary

We define FG as a central bank statement that provides direct, explicit information beyond the Bank's macroeconomic projections about the *probable stance of monetary policy* in the future. Outside the academic literature, interpretations of FG vary, so it is crucial to establish common ground upon which to hold meaningful debate. For instance, ordinary forward guidance is sometimes misinterpreted as a commitment, but it is not.

Although the macroeconomic projections in the Bank of Canada's *Monetary Policy Report* provide information about the probable stance of monetary policy in the future, they are *indirect* signals. Macroeconomic projections require at least one additional step of information processing before they can be mapped back to a monetary policy path or stance. That is, projections would need to be input into an assumed form of the central bank's reaction function (or monetary policy rule). This additional step is not straightforward, so different observers might arrive at different conclusions. For instance, they might have different interpretations of the data, different macroeconomic models or different perceptions of the reaction function.

The Bank of Canada's Governing Council has often provided FG about its views on the likely near-term direction of the policy rate at the same time as it provides its baseline macroeconomic outlook (i.e., its quantitative macroeconomic projections). The Bank also discusses risks around its baseline projection scenario to help guide the perceived distribution of potential economic outcomes.

Below, we provide examples of FG. In these examples, the FG is usually related to the direction of policy rate changes for the next or next few policy interest rate announcements. The objective of this FG is twofold: First, it is intended to influence expectations for the policy interest rate in the near term. Second, the FG is intended to reduce uncertainty, which helps make the monetary policy transmission mechanism more effective. Importantly, because a central bank can change its FG in reaction to macroeconomic developments, FG can also support the transmission mechanism by helping markets better understand Governing Council's reaction function.[4] Similarly, Carney (2018, 3) points out (in relation to the Bank of England) that:

> "Guidance thus helps people to think along with the [Monetary Policy] Committee [MPC] so that their expectations about the path of policy adapt with ours as economic circumstances change. This can make monetary policy more effective by reducing unwarranted volatility in interest rate expectations and the extent to which the MPC has to move Bank Rate to meet the inflation target. The more those expectations are aligned with the policy path necessary to achieve the inflation target, the higher the probability that policy objective will be achieved."

[4] Fay and Gravelle (2009) make the point, however, that FG that is perceived by the market as unconditional reduces the capacity of the market to learn about the central bank's evolving reaction function. So, whereas conditional FG can improve the effectiveness of the monetary policy transmission process, unconditional FG is less able to do so.

There are also many other approaches to FG. For instance, some central banks provide *quantitative* FG, where the central bank releases its numerical projected policy rate path.[5] The Reserve Bank of New Zealand, Sweden's Riksbank and Norway's Norges Bank, among others, regularly provide such projected paths. There is also *qualitative* FG, which provides verbal information about some aspects of the projected policy rate path (whether or not that path is released). Such qualitative FG may describe any expected leaning of the monetary policy changes in a given direction.

The Bank of Canada has often used qualitative FG. These examples are taken from Bank press releases:

- "[F]urther reduction in monetary stimulus will be required…over the next four to six quarters…" (Bank of Canada 2005).
- "The Governing Council continues to judge that interest rates will need to rise further, and the pace of increases will be guided by the Bank's ongoing assessment of the economy and inflation" (Bank of Canada 2022d).
- "[T]he Governing Council still judges that the policy interest rate will need to rise further" (Bank of Canada 2022e).

Appendix I defines other types of forward guidance: state-contingent, time-contingent and qualitative. The types are not mutually exclusive and are more like attributes that can be combined.

In a crisis, central banks can use EFG to provide additional policy stimulus once the policy rate reaches the ELB and cannot be cut further. This EFG is often accompanied by QE. By signalling that the central bank will keep the policy rate at the ELB for a certain period, EFG exerts downward pressure on expectations for future policy interest rates, which in turn exerts downward pressure on longer-term interest rates. EFG sends a stronger signal than ordinary FG.[6]

One way to send a stronger signal is to use commitment-based FG (a variant of EFG).[7] The intention is that market interest rate expectations will reflect a (conditional) commitment to keep policy rates low for long. That is, by signalling to financial market participants that the policy rate will remain low over a longer period than market participants would otherwise expect, central banks seek to keep longer-term rates from rising, even if economic activity shows some signs of strength. EFG also helps to reduce interest rate uncertainty and, by extension, economic uncertainty. For instance, Jain and

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[5] For example, at the Bank of England, "Communication was used extensively in 2022 to guide expectations. **Here, the practice of publishing an interest rate path, which the Riksbank had done since 2007, proved to be useful.** While the policy path published in February 2022 quickly proved to be outdated, subsequent policy rate paths were useful in conveying to the financial press, the markets, price- and wage-setters and the public at large that the Executive Board saw it as essential to continue raising the policy rate for some time in order to defend the inflation target" (Ingves 2024, 114–115, emphasis added).

[6] In a 2021 speech, Bank of Canada Governor Macklem talked about using EFG to make monetary policy more effective at the ELB: "In certain circumstances, to support employment and return inflation to target, we can leverage the flexibility that already exists in our framework to make monetary policy more effective at the ELB. One of the best ways to do that is to use exceptional forward guidance. This involves committing to holding rates low for longer to instill greater confidence in the economic recovery" (Macklem 2021b).

[7] Commitment-based FG is also known as Odyssean FG in the academic literature.

Sutherland (2020) find that FG tends to reduce the dispersion (a proxy for uncertainty) and interest rate forecast errors.

EFG indicates a clear commitment to delivering a highly accommodative state of monetary policy.[8] For advanced economies, this has largely been a commitment to hold the policy rate at what is deemed to be the effective lower bound for an extended period, with the length of time being conditional on some state of the economy.

Accordingly, EFG typically includes the word "until" and sometimes also the word "will" to signal conditionality and commitment, respectively. EFG typically has the following stylized form: "The central bank *will* hold the policy rate at x% *until* the inflation/economy has achieved State X." EFG is often misrepresented or misunderstood as an unconditional commitment, but central banks see these commitments as conditional because they are ultimately bounded or limited by the central bank's desire to maintain it inflation-fighting credibility. This is discussed in more detail in sections 4 and 5.

3 A Review of the Bank of Canada's economic assessments and monetary policy during the COVID-19 crisis

a. Extraordinary forward guidance during the pandemic

The Bank's EFG consisted of several key events over 2020 to 2022. These were followed by a period of monetary policy normalization:

July 15, 2020—This initial EFG was based on a state-contingent FG commitment:[9]

> "**The Governing Council will hold the policy interest rate at the effective lower bound until economic slack is absorbed so that the 2 percent inflation target is sustainably achieved.** In addition, to **reinforce this commitment** and keep interest rates low across the yield curve, the Bank is continuing its **large-scale asset purchase program** at a pace of at least $5 billion per week of Government of Canada bonds" (Bank of Canada 2020b, emphasis added).

October 28, 2020—A time-contingent component was added to the state-contingent commitment-based FG sentence that was introduced in July 2020:[10]

> "The Governing Council will hold the policy interest rate at the effective lower bound until economic slack is absorbed so that the 2 percent inflation target is sustainably achieved. **In**

[8] Of course, no central bank would ever issue a binding commitment on the future state of monetary policy. Even when central banks use this strong, commitment-based language, forecasters and market participants understand that any such commitment is *conditional* on the inflation outlook (and, in some cases, on the unemployment outlook). Indeed, central banks always include a caveat specifying this conditionality. See Sutherland (2023, 227) for more.

[9] State-contingent forward guidance is defined as a statement that provides new information about the central bank's monetary policy reaction function (i.e., beyond restating the central bank's mandate). See Appendix I for definitions.

[10] One caveat is that the time horizon here refers to the outlook for the absorption of economic slack, not the outlook for the policy rate. Yet here the two are linked.

> **our current projection, this does not happen until into 2023**" (Bank of Canada 2020c, emphasis added).

April 21, 2021—Economic slack was projected to be absorbed sooner:

> "Based on the Bank's latest projection, this is now expected to happen some time in the **second half of 2022**" (Bank of Canada 2021a, emphasis added).

October 27, 2021—Again, economic slack was projected to be absorbed sooner, this time by one quarter. QE ended and asset purchases shifted to the reinvestment phase. This was an incremental removal of the stimulus provided by the positive net purchases under QE:

> "In the Bank's projection, this happens sometime in the middle quarters of 2022. In light of the progress made in the economic recovery, the Governing Council has decided to **end quantitative easing** and keep its overall holdings of Government of Canada bonds roughly constant" (Bank of Canada 2021b, emphasis added).

January 26, 2022—The Bank withdrew its EFG and replaced it with *qualitative* FG that indicated the policy rate was expected to increase:

> "While COVID-19 continues to affect economic activity unevenly across sectors, the Governing Council judges that overall slack in the economy is absorbed, thus satisfying the condition outlined in the Bank's forward guidance on its policy interest rate. **The Governing Council therefore decided to end its extraordinary commitment to hold its policy rate at the effective lower bound.** Looking ahead, the Governing Council **expects interest rates will need to increase**, with the timing and pace of those increases guided by the Bank's commitment to achieving the 2% inflation target" (Bank of Canada 2022a, emphasis added).

March 2, 2022—Governing Council decided to raise the policy rate by 0.25%. The announcement included new FG:

> "As the economy continues to expand and inflation pressures remain elevated, the Governing Council expects interest rates will need to rise further" (Bank of Canada 2022b).

April 13, 2022—Governing Council started quantitative tightening and raised the policy rate by 0.5%:

> "The Bank is also ending reinvestment and will begin quantitative tightening (QT), effective April 25. Maturing Government of Canada bonds on the Bank's balance sheet will no longer be replaced and, as a result, the size of the balance sheet will decline over time" (Bank of Canada 2022c).

The COVID-19 crisis was not the first time the Bank had used EFG. In April 2009, during the global financial crisis, the Bank announced a "conditional commitment" to hold the policy rate at the ELB for a little over a year. Specifically, the commitment said:

> "Conditional on the outlook for inflation, the target overnight rate can be expected to remain at its current level until the end of the second quarter of 2010 in order to achieve the inflation target" (Bank of Canada 2009).

That April 2009 announcement clearly meets the definition of EFG outlined above, even though its sentence structure is somewhat different and it uses a different conditioning variable than the Bank's July 2020 EFG. There is arguably no real difference between the two episodes of EFG in terms of their intent to commit to hold the policy rate at the ELB for an extended period of time.

Compared with its pandemic-related EFG, the Bank's 2009–10 EFG was more explicit abouts its conditionality—indeed, the announcement contains the word "conditional"—and about the end date of the commitment. The Bank repeated that commitment word for word in each subsequent press release announcing its monetary policy decisions until April 2010. In its April 2010 interest rate announcement, the Bank removed the commitment-based guidance and said that it was "…appropriate to begin to lessen the degree of monetary stimulus" (Bank of Canada 2010). The removal of the commitment guidance occurred before the commitment was set to end at the end of June 2010, but it was in line with the conditionality embedded in the phrasing of the EFG. The Bank raised is policy rate by 25 basis points at its next decision meeting in early June.

b. Sequencing the tightening of the pace of asset purchases and the first rate hike

In their review focusing on the United States, Eggertsson and Kohn (2023) write:

> "The forward guidance issued under the new framework amplified the inflationary bias already implicit in the 2020 Policy Framework.
>
> …A second source of additional inflation bias was that **the forward guidance on its asset purchases delayed its ability to raise rates**. First, it committed to give warning far in advance before any changes would be made to its asset purchase program. Second, it declared that it would stop asset purchases before it could start raising the federal fund rate. In our view this brought additional inertia and delay into the policy process that did not rely on solid economic principles" (emphasis added).

This raises the question of whether the Bank of Canada's FG implied or led to a similar delay in policy rate increases due to a desired sequencing (a desire to end net asset purchases before raising the policy rate).

Below we document how the Bank communicated the conditions under which QE would end (i.e., its sequencing).

June 3, 2020:

> "As market function improves and containment restrictions ease, the Bank's focus will shift to supporting the resumption of growth in output and employment. The Bank maintains its commitment to continue large-scale asset purchases until the economic recovery is well underway. Any further policy actions would be calibrated to provide the necessary degree of

> monetary policy accommodation required to achieve the inflation target" (Bank of Canada 2020a.)[11]

July 15, 2020:

> "The Governing Council will hold the policy interest rate at the effective lower bound until economic slack is absorbed so that the 2 percent inflation target is sustainably achieved. **In addition, to reinforce this commitment and keep interest rates low across the yield curve, the Bank is continuing its large-scale asset purchase program** at a pace of at least $5 billion per week of Government of Canada bonds. This QE program is making borrowing more affordable for households and businesses and will continue **until the recovery is well underway**" (Bank of Canada 2020b, emphasis added).

In June 2020, the Bank had yet to announce the EFG, but it implied that its use of large-scale asset purchases would shift from supporting market functioning to supporting output and employment and that these purchases would be calibrated to provide monetary policy accommodation. In the July 2020 announcement, when it began to use EFG, the Bank shifted the purpose of its large-scale asset purchases to support the EFG and, implicitly, the sustainable achievement of the Bank's 2% inflation target. The Bank's EFG continued to indicate that QE—the large-scale asset purchases—would be adjusted or would end only after the economic recovery had been achieved. So the Bank had a multi-pronged monetary stimulus package, with QE and EFG potentially on separate tracks in terms of the timing of their ending. Large-scale asset purchases were to continue until the economic recovery was well underway, while the policy rate was being kept at the effective lower bound until economic slack was absorbed so that the 2% inflation target was sustainably achieved. This guidance did not imply any predetermined sequencing.

Eventually, as economic conditions improved, the Bank decreased its QE program:

- On October 28, 2020, the Bank recalibrated the QE program to shift asset purchases toward longer-term bonds. It also reduced the pace of asset purchases to at least $4 billion a week.
- On April 21, 2021, the Bank adjusted the weekly net purchases of Government of Canada bonds to a target of $3 billion. This reduction in the amount of incremental stimulus being added each week reflected the progress made in Canada's economic recovery.
- On July 14, 2021, the target pace was adjusted to $2 billion per week.
- On October 27, 2021, the Bank ended quantitative easing and entered a reinvestment phase. During this phase, the Bank purchased Government of Canada bonds only to replace maturing bonds so that the Bank's holdings would remain relatively stable over time.
- On April 13, 2022, the Bank announced that it was ending its reinvestment phase and would begin the process of QT. This came after the first policy rate increase in March 2022.

[11] See the *Review of the Bank of Canada's Exceptional Policy Actions During the Pandemic* (Bank of Canada 2025) for a discussion of the distinction between asset purchases for market functioning and those for monetary policy stimulus.

As the economic recovery unfolded, the Bank began providing insight into the sequencing of QE, that is, from the unwinding of the adding monetary stimulus phase, to the QE reinvestment phase, the policy rate increase phase, and the QT phase. In his March 23, 2021, speech, Deputy Governor Gravelle provided insight into monetary policy normalization:

> "I'd like to stress a few things about our journey to this reinvestment phase of QE.
>
> **First, the process for getting there will be gradual and in measured steps**.
>
> Second, the timing of these moderations to the pace of purchases, and the amount of time that we take to get to the reinvestment phase, will be guided by our evolving assessment of the macroeconomic outlook and the strength and durability of the recovery.
>
> And third, adjusting the pace of QE purchases won't necessarily mean that we have changed our views about when we will need to start raising the policy interest rate.
>
> **These decisions are distinct.** We have committed to continuing our **QE** program—by which we mean positive net purchases—**until the recovery is well underway**. Meanwhile, **a decision on the policy rate is linked to the economic outcomes described in our forward guidance**—which says that we will leave the policy rate at 0.25 percent **until economic slack is absorbed** so that the 2 percent inflation target is sustainably achieved. In the forecast that we published in January, we projected this wouldn't happen **until into 2023**. So, we would **arrive at the reinvestment phase of QE some amount of time before we start to increase the policy interest rate**.
>
> Eventually, we will reach a point where Governing Council is of the view that the outcomes outlined in our forward guidance have been achieved and that we will need to **start raising our policy rate** in order to sustainably achieve our inflation objective.
>
> **How long it takes to transition through these different steps will, of course, depend on how the trajectories for economic activity and inflation unfold**" (Gravelle 2021, emphasis added).

The Bank was explicit about the sequencing of events: the reinvestment phase (i.e., the end of QE) would occur before the policy rate began to rise, and the pace of QE purchases would moderate before QE ended and the reinvestment began. The Bank was concerned about surprising financial markets and creating uncertainty; therefore, the Bank also made it clear that the various steps in the sequence would be measured and gradual. Apart from explaining when QT would occur, the Bank was fully explicit about the sequence for withdrawing its monetary policy tool. As the economic recovery progressed, the timing of each aspect of the withdrawal sequence became clearer.

On September 9, 2021, Governor Macklem provided insight into the timing of the start of QT:[12]

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[12] Staff research found that the theoretical literature at the time suggested that lifting the policy rate before entering a period of quantitative tightening might have several advantages. The public preferences of other central banks at the time suggested that the end of their net asset purchases (QE) and reinvestment periods would come first, then policy rate increases and then quantitative tightening. This is the same sequence the Bank of Canada eventually used.

> "Eventually, when we need to reduce the amount of monetary stimulus, you can expect us to begin by raising our policy interest rate. **What this all means is it is reasonable to expect that when we reach the reinvestment phase, we will remain there for a period of time, at least until we raise the policy interest rate.** But again, let me emphasize, when we get to the reinvestment phase and how long we are in it are monetary policy decisions that will depend on the strength of the recovery and the evolution of inflation…
>
> Eventually, the reinvestment phase will end, and we will stop purchasing bonds to replace the ones that are maturing, so our holdings of Government of Canada bonds will decline. But as we mentioned above, it is **reasonable to expect that when we do eventually need to reduce monetary stimulus, our first move will be to raise the target for the overnight rate**—our policy interest rate" (Macklem 2021a, emphasis added).

Governor Macklem (2021b) also provided a brief comment on December 15, 2021:

> "Having ended quantitative easing, we are now focused on our forward guidance—on assessing the diminishing degree of slack in the economy and on bringing inflation sustainably back to target."

c. The economic outlook: Did the Bank misread the inflation dynamics?

> "[W]e have to be more cautious about a key assumption, the rate of growth of the economy's productive potential, that we used to take somewhat for granted. The right response to this uncertainty is to attach less weight to output growth itself and more to direct indicators of economic slack [unemployment], even if these emerge only with a delay" (Broadbent 2013, 11).

Given that its EFG emphasized the absorption of economic slack and the sustainable return of inflation to target, it is important to review the Bank's assessment of slack and its inflation-forecasting performance leading up to when the EFG was removed.

When it ended the EFG in January 2022, the Bank estimated that the fourth-quarter 2021 output gap (excess supply) was smaller or had declined relative to the estimate in the October 2021 *Monetary Policy Report* (MPR) and was essentially closed in the first quarter of 2022.[13] The January MPR noted, in reference to a broader set of indicators (including those from the labour market), that slack in the economy was assessed as being absorbed. Nonetheless, as we argue below, leading up to the January decision it was clear that the Bank had tied the timing of removing the EFG's commitment to the closing of the output gap rather than to a broader set of indicators related to capacity pressures.

For most central banks, forecasting inflation and assessing economic slack, which inflation forecasts rely on, were exceptionally difficult during the pandemic. In Canada, like in the United States and elsewhere, inflation was initially perceived as transient. It was not until the October 2021 MPR that

[13] Box 1 in the January 2022 MPR "…estimates that the output gap—the difference between GDP and supply—was about -0.75% to 0.25% in the fourth quarter, smaller than the estimate of -2.25% to -1.25% for the previous quarter" (Bank of Canada 2022c).

the Bank's view shifted to see more persistence in the supply constraints. The October MPR noted: "Given **persistent** supply constraints and the increase in energy prices, the Bank expects inflation to stay above the control range for longer than previously anticipated…" (Bank of Canada 2021d, emphasis added). Before then, there had been recurring mentions of *temporary*, pandemic-related factors affecting inflation.[14]

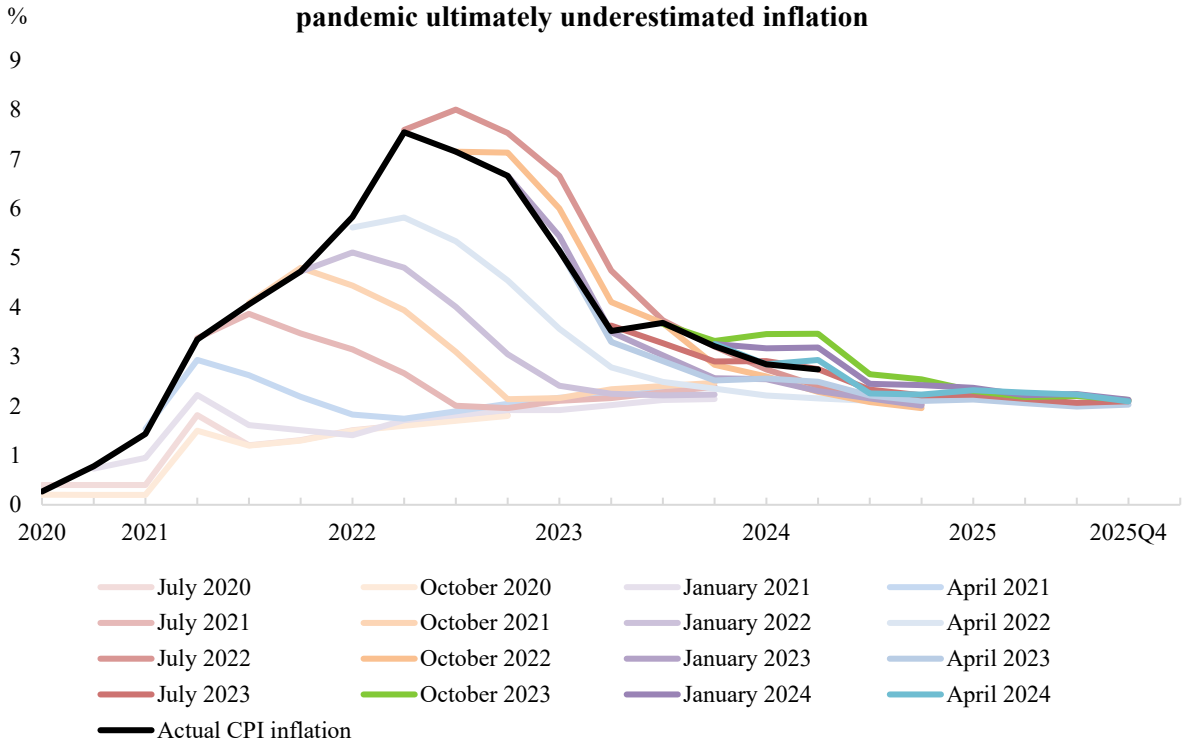
Inflation jumped from 2.2% in March to 3.4% in April 2021—above the Bank's inflation-control band. It remained above the band until June 2023. Although in December 2021 consumer price index (CPI) inflation was already at 4.8%, the January 2022 MPR projected that CPI inflation would peak at 5.1% in the first quarter of 2022 and then fall to 3% by the end of 2022 (**Chart 1**).[15]

Before January 2022, the Bank had reported on certain capacity measures in its MPR and surveys but had not used or mentioned them directly when assessing whether the EFG needed to be removed. The Bank had not explicitly included other potential indicators of current economic slack in its assessment of slack absorption in relation to the EFG. Although the Bank discussed other indicators of capacity pressures, such as those related to the labour market and indicators from the Business Outlook Survey (BOS), the Bank had not published a broad assessment of economic slack before the one published in the January 2022 MPR.

[14] For example, the July 2021 MPR noted, "CPI inflation will likely remain at or above 3 percent through the rest of 2021 due to temporary factors related to the pandemic." Bank of Canada (2021c, 11).

[15] CPI inflation ultimately peaked at 8.1% in June 2022 instead. **Chart 1** comes from Macklem (2024, 52, Figure 1).

Chart 1: Inflation projections from the *Monetary Policy Report* during the pandemic ultimately underestimated inflation



Note: CPI is consumer price index. Each series shows the inflation projection at the time of each *Monetary Policy Report*.
Sources: Statistics Canada and Bank of Canada calculations and projections
Last data plotted: 2025Q4

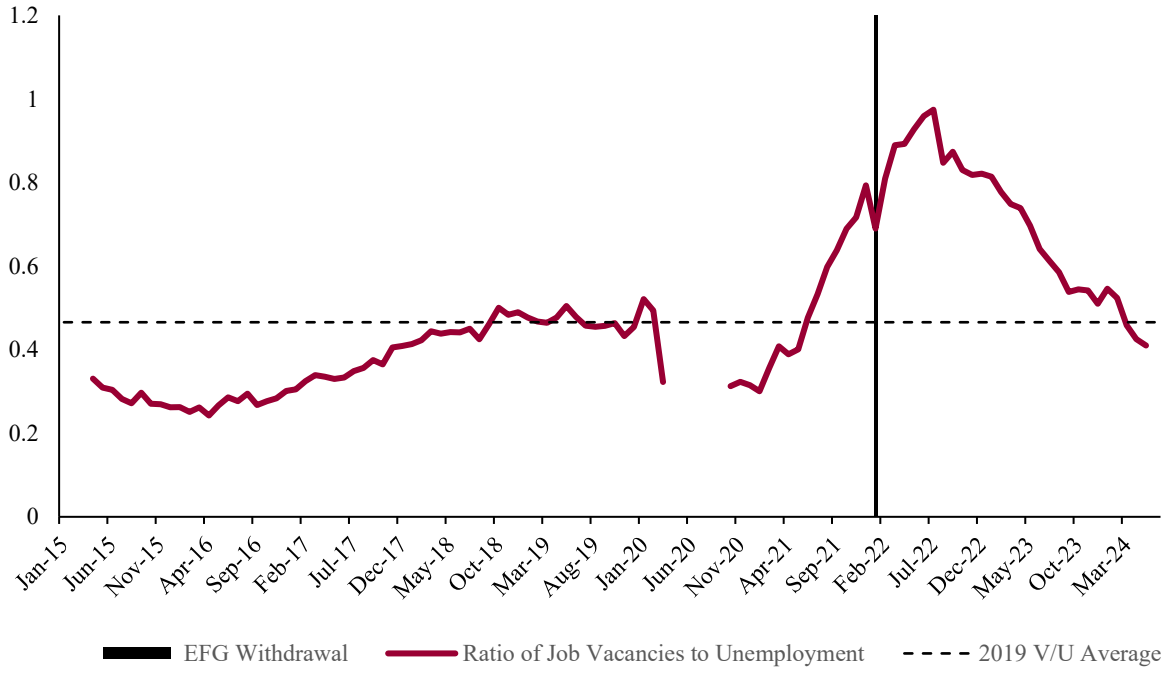
A review of the two MPRs that preceded the January 2022 removal of the EFG suggests that a broader assessment of slack would have shown indications that economic slack was getting close being fully absorbed. Even though employment had largely returned to its pre-pandemic level by the end of the third quarter of 2021, the October 2021 MPR noted that based on the multiple-indicators approach, the labour market had not yet fully recovered to pre-pandemic levels. At the same time, firms participating in the third-quarter BOS reported a sharp uptick in labour shortages, with the intensity of labour shortages reaching multi-decade highs. The October MPR also noted that: "Firms report increased capacity pressures due to labour shortages and supply disruptions" (Bank of Canada 2021e, 16). Below is a sample of observations from the third-quarter 2021 BOS related to capacity pressures (Bank of Canada 2021f):

- "An unusually large portion of firms said they would have difficulty meeting an unexpected increase in demand (Chart 2)."
- "Plans to increase wage growth are widespread (Chart 10). Firms reported their compensation plans are fuelled by the need to attract and retain workers amid strong labour demand."
- "Almost half of businesses now expect inflation to be above 3 percent over the next two years, with most anticipating it will be between 3 and 4 percent (Chart 13)."

Even in the second-quarter 2021 BOS, firms had noted a sharp uptick in capacity pressures and in the intensity of labour shortages (although actual labour shortages had not returned to pre-pandemic levels at that point). The Bank also noted that housing activity had been elevated (relative to historical norms) for several MPRs leading up to the January 2022 publication and the removal of the EFG.

Some composite estimates of economic slack that include measures of capacity pressure from the BOS and one or two key metrics of labour market tightness at the time of the July 2021 interest rate decision, or certainly the October 2021 interest rate decision, seem to paint a different picture than an estimate of economic slack based solely on the estimate of the output gap. Eggertsson and Kohn (2023) explain how the ratio of job vacancies to unemployment (v/u) provides a good measure of labour market tightness, balance or slack in the United States. Mendes (2024) also suggests that v/u is an indicator of excess demand in Canada. **Chart 2** shows that, by July 2021, v/u in Canada had already reached its 2019 average.[16] Basing the Bank's assessment of economic slack on directly *observable* indicators of slack, such as v/u, rather than or as well as on the output gap, might have led to an earlier removal of the EFG.

Chart 2: Ratio of job vacancies to unemployment (v/u)



Notes: Due to data limitations at the onset of the pandemic, job vacancies data from the Job Vacancy and Wage Survey are unavailable for the middle quarters of 2020 (April 2022 MPR).
Last observation: May 2024

[16] This v/u average is for illustrative purposes only and is not a formal threshold used for policy decisions. Further, the Bank used a suite of indicators of economic slack during the pandemic. See, for example, Box 3 in the January 2022 MPR.

Nonetheless, as we describe above, the Bank did adjust its view, over several interest rate decisions, on when the EFG was to be removed. This demonstrates that the EFG was clearly conditional on the outlook for the output gap, a forward-looking variable. Moreover, relative to the Bank's communications leading up to the January 2022 interest rate announcement, the EFG can be viewed as having ended one quarter earlier than the previous MPR had indicated would happen. It can also be argued that the EFG ended at the appropriate time, given that the assessment of when slack was absorbed was also moved forward by one quarter and coincided with the January interest rate decision. The issue is whether the Bank's overreliance on the output gap indicator for its public discussion of when slack was observed was also driving its internal assessment of when to raise the policy rate from the ELB.

4 Conceptual issues: Commitment-based FG credibility versus inflation-fighting credibility

a. What is the trade-off?

A central bank could have to trade off preserving the future credibility of its EFG tool against the credibility of its ability to fight inflation. EFG can generate a *time-inconsistency* issue for the central bank: an FG commitment might have to be weighed against the objective of meeting the inflation target if a set of positive shocks to inflation were to materialize before the EFG conditions have been met. Many believe the sharp rise in inflation following the COVID-19 crisis was at least partly the result of central banks (including the Bank of Canada) sticking to their commitments too long rather than tightening policy in response to the (persistent) rise in inflation (see Orphanides 2023; Schnabel 2024a; and section 5b). To understand this trade-off better, we first consider the objectives of EFG.

At the ELB, central banks may need to deploy additional tools to stimulate the economy, which is why they use EFG. EFG helps a central bank communicate its commitment to shift its reaction function away from a flexible one that reacts pre-emptively to inflationary dynamics to one that is relatively more predetermined. The central bank can signal a willingness to tie its hands. Yet, as noted below, that willingness is limited. The commitment automatically ends (is *bounded*) once the central bank's inflation-fighting credibility seems to be at risk.

Under what circumstances might a bank's monetary policy committee opt to use EFG? In the early stages of a severe crisis, the policy rate would likely be cut to the ELB. Thereafter, the monetary policy committee must weigh the expected downside risks of EFG against the expected upside risks.[17] Given the great uncertainty inherent in a new type of crisis, such as the COVID-19 pandemic, the monetary policy committee's modal projections would tend to come from a heavily skewed distribution—that is, the balance of risks would be heavily tilted to the downside (i.e., negative growth). Sound risk management, then, favours the use of whatever monetary policy tools the

[17] We use "expected" in the sense of probability theory: the probability-weighted outcomes.

committee has at its disposal. As Macklem (2024, 60) notes, "Any policy involves risk, but inaction can be riskier."

Why use EFG instead of ordinary FG? With EFG, a central bank signals that it will stick to its commitment unless it is absolutely necessary to adjust its monetary policy strategy. By contrast, ordinary FG is less forceful and more like a conventional macroeconomic projection—more about informing and less about persuading. Yet, like all macroeconomic projections, ordinary FG is subject to a lot of uncertainty, so changes or tweaks to ordinary FG along the way are to be expected—indeed, they are standard practice.

The EFG trade-off appears if, after a central bank has provided EFG, inflation dynamics improve more quickly than expected while the EFG's stated conditions have not yet been met (e.g., absorption of economic slack). The dilemma is exacerbated if the observed inflation shock turns out to be especially persistent. The central bank would have already factored in a modest inflation overshoot. If the central bank misreads the nature of the inflation shock—that is, if the inflation shock is larger or more persistent than assessed and the inflation overshoot is not within the *expected* potential inflation overshoot, not responding to that changing inflation outlook early would normally mean that higher policy rates would be needed later. This delayed reaction and the resulting contribution to inflationary pressures could have inflation-fighting credibility costs.

Yet, equally, abandoning an EFG commitment risks reputation damage—particularly relating to the credibility of the EFG and other more ordinary FG. This reputation damage can weaken the efficacy of one of the monetary policy committee's most important monetary policy tools thereafter. Protecting future EFG credibility is an abstract concept, and the costs associated with the loss of this type of credibility are intangible, but it is nonetheless an important consideration. If another crisis were to arise in the future, a monetary policy committee could be faced with a less potent tool in its monetary policy accommodation tool kit. That could have real economic costs.

The situation is further complicated by the nature of the inflation acceleration. Demand-driven inflation may warrant one monetary policy response, but supply-driven inflation may warrant another. To complicate matters further, supply shocks and the output gap interact. That is, "[s]upply shocks have a bigger impact on inflation when the economy is in excess demand" (Macklem 2024, 57). Identifying the nature of the inflation increase in real time is complex and challenging, not least because of the uncertainty around estimates of economic slack, such as the output gap.

This helps explain the form of the EFG initially used during the pandemic by the Bank of Canada: "The Governing Council will hold the policy interest rate at the effective lower bound until economic slack is absorbed so that the 2 percent inflation target is sustainably achieved" (Bank of Canada 2020a). Linking the EFG to economic slack helped preserve the flexibility necessary to respond to different shocks differently rather than uniformly. Of course, it is possible that EFG serves its purpose, inflation returns to target consistent with the initially projected timeline, and, therefore, there is neither any incentive to remove the EFG commitment early nor any damage to the monetary policy authority's FG credibility.

Can we quantify the trade-off between preserving forward guidance credibility (honouring the commitment regardless) and time inconsistency (abandoning the FG commitment once its aims have

been achieved to avoid missing the inflation target)?[18] Recent research provides some broad insight into this specific question. Generally, theory suggests that **imperfect credibility undermines the efficacy of monetary policy, including FG** (Appendix III). Also noteworthy is that the Bank's pandemic FG had similarities with theoretical proposals for optimal forward guidance in the literature (e.g., Eggertsson and Woodford 2003 and Bilbiie 2019). We survey some relevant theoretical literature in Appendix III.[19]

b. The timing of exiting EFG at the ELB

During the pandemic, did central banks fall behind the curve? Did the Bank of Canada? That is, given the subsequent surge in inflation, should central banks have raised rates sooner? We argue that it is important not to conflate monetary policy decisions with inevitable forecasting limitations when making such assessments. Monetary policy decisions rely heavily on central bank projections.

Eggertson and Kohn (2023) suggest that the EFG introduced by the US Federal Reserve's Federal Open Market Committee (FOMC) on September 16, 2020, contributed to the inflation surge during the pandemic. Orphanides (2023) suggests that both the FOMC and the European Central Bank (ECB) fell behind the inflation curve by falling into what he calls the forward guidance trap. English, Forbes and Ubide (2024, 11) state:

> "When the pandemic hit, central banks had anticipated a long period of economic weakness, and so had provided guidance that was more 'commitment like'. Such guidance was designed to provide a larger boost to the recovery, but it also made it more difficult to adjust policy if economic conditions developed in an unexpected manner."

To address the question, we need to consider two different vantage points. First, what was the optimal policy given the information available at the time and the real-time projections based on that information? Any deviation in *actual policy* from that alternative, *optimal policy* could reasonably be considered a policy error. Second, what would have been the optimal policy had the central bank known, with perfect foresight**,** the actual data (as if it knew then what we now see as historical data)? For the most part, a deviation in actual policy from that alternative, optimal policy could be considered a forecast error.[20]

Darracq Pariès, Kornprobst and Priftis (2024, 2) consider this same question for the ECB. They conclude:

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[18] "Odyssean guidance [a form of EFG] is useful at the lower bound because optimal monetary policy in those circumstances may be at least somewhat time-inconsistent, in the sense of Kydland and Prescott (1977)—that is, at the lower bound, monetary policymakers may want to commit to interest-rate paths or to other actions from which they will have incentives to deviate in the future" (Bernanke 2020, 955), brackets added.

[19] Naturally, the empirical evidence about commitment-based forward guidance is extremely limited (very few commitment cases to study)—only one paper to our knowledge: Sutherland (2023) estimates the influence of forward guidance during the Bank of Canada and the Sveriges Riksbank EFG periods and finds that it greatly increased (the influence of FG on professional interest rate forecasts was estimated to have at least doubled during those periods).

[20] Technically, this latter type of deviation could also be compounded by a policy error.

> "Our results suggest that, unlike the cases of perfect foresight, there does not exist a strong rationale for hiking policy rates aggressively early. Instead, real-time prescriptions call for a less steep interest rate increase, which is however more persistent than in the full-information counterfactuals. The real-time simulations confirm that actual policy fares well against alternative policy conducts and that there was little room to improve welfare."

Similarly, during the EFG period, despite projected modest, temporary periods of above-target inflation (i.e., small overshoots),[21] the Bank of Canada's inflation projections consistently suggested that inflation would return to target over the projection horizon.[22] From this perspective, both the policy rate level and the use of EFG were appropriate.

Conversely, had the Bank known ex ante how high (and persistent) the inflation rate would get and for how long, the inflation projections would have been different and higher, the conditions for satisfying EFG would have been met sooner, and the policy rate would have been increased sooner. As Bernanke and Blanchard (2023, 30) note, "The pandemic was extraordinarily disruptive, making forecasting and policymaking difficult."

The Bank was not "trapped" by its FG (in the language of Orphanides 2023). Rather, the Bank's projections at the time suggested that its EFG was appropriate. Yet, as we know from hindsight, the Bank's projections did not foresee the extent of the inflation overshoot, which was due in part to global supply shocks. Had Governing Council seen the surge in inflation coming, that would have triggered the bounded nature of EFG discussed below. We now turn to what lessons we can draw for the future conduct of monetary policy when using EFG.

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[21] "After declining to 2 percent during 2022, inflation is expected to rise modestly in 2023 as the economy moves into excess demand. The excess demand and resultant increase in inflation to above target are expected to be temporary. They are a consequence of Governing Council's commitment to keep the policy interest rate at the effective lower bound until economic slack is absorbed so that the 2 percent inflation target is sustainably achieved. Inflation is expected to return toward the target in 2024" (Bank of Canada 2021c, 22).

[22] The projections implied temporary periods of above-target inflation, but this was an anticipated aspect of the Bank of Canada Governing Council's EFG. "An implication of exceptional forward guidance is that inflation will likely go a little above the target after we exit from the ELB before it comes back to the target over the medium term" (Macklem 2021b). For the sequence of projections, see Chart 17 in the July 2020 MPR, Chart 17 in the October 2020 MPR, Chart 16 in the January 2021 MPR, Chart 14 in the April 2021 MPR, Chart 18 in the July 2021 MPR, Chart 14 in the October 2021 MPR and Chart 15 in the January 2022 MPR.

5 Lessons learned: Practical guidelines for future EFG use

a. First lesson: EFG and pre-announced unwind sequences must be bounded (not a firm commitment)

It is important for monetary policy committees to communicate to the public that an EFG commitment is bounded. That is, the conditions for exit from EFG may be met earlier than anticipated if the economic context were to shift substantially and central bank credibility were at risk—for example, if inflation were significantly higher than expected or negative supply shocks were to materialize.

Even when EFG is conditioned on an exit variable—that is, ending the EFG is tied to meeting a condition—there is a high propensity for forward guidance commitments to be misinterpreted by the public as promises. This can leave monetary policy committees feeling trapped. The experiences of the Reserve Bank of Australia and, to a lesser degree, the Bank of Canada during the pandemic highlight how important it is for monetary policy committee members to choose their words incredibly carefully. In general, the public may not understand a commitment as being bounded. During the pandemic, the public and media coverage tended to see any guidance that the policy rate "will stay low for a long time" as a "take it to the bank" promise.[23] It is important for public communications of the commitment not to be so vague as to give the impression of unconditionality.

Communications should include wording that acknowledges a commitment but also acknowledges that the central bank can "never say never." In other words, material shifts in the economic outlook could occur, and these would cause the central bank to drop the commitment. While market participants and central bank watchers would understand this (or would understand that this is implicit in any form of FG) at the outset of an announced EFG, the media and the public might not. So public communications (in particular speeches and Q&A sessions) should clarify that the commitment is ultimately bounded and that the EFG could be abandoned in response to material shifts in the economic outlook.

The form of the EFG could also play a role in making it clear to all that the commitment is bounded, time limited and conditional. Providing a sense that there are limits to the commitment is bolstered if the length of the commitment is conditioned on a projected economic variable rather than on thresholds for real-time data. For example, it is possible that such real-time thresholds may not be reached although inflation projections rise enough to put the central bank's credibility at risk.

Of course, there is also a trade-off between how potent EFG can be and how flexible it can be. The more unconditional, and therefore stronger, the commitment is, the more impact it should have, at least initially. But this kind of EFG carries greater risk because it slows down the monetary policy

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[23] As English, Forbes and Ubide (2024, 18) point out: "Even more damaging, in some countries the central bank was seen as having misled the public by providing guidance that rates would stay low for an extended period, before backtracking on what had been **wrongly seen as an unconditional commitment** (such as the abrupt end to yield curve control in Australia)."

committee's reaction time to confront material changes in the economic and inflation outlook. As a result, the central bank's inflation-fighting credibility can be negatively affected. Conversely, the more flexible the EFG is, the less risk it carries and the less impact it would have on lowering interest rate expectations initially, and, in the end, on the degree of stimulus supplied. Finding a balance between the potency and the flexibility of EFG depends on, among other things, the degree of downside risk to the economy and the committee's view of inflation and the risk of an inflation surge resulting from the committee's actions. **In balancing this potency versus credibility trade-off**, the monetary policy committee can embed varying degrees of commitment in an EFG statement. At one end of the spectrum, it could formulate EFG without any conditionality apart from a fixed horizon. At the other end of the spectrum, it could formulate the EFG to be fully conditional on economic variables.

Sequencing: to minimize the risk of removing EFG too late due to interdependent sequencing of QE and EFG, monetary policy committees should emphasize that the commitment to a predefined unwind sequence for extraordinary monetary policy tools is also bounded and may be changed, conditional on the unfolding economic context. The policy rate, FG and QT are meant to be mutually reinforcing, but they stimulate economic activity through different channels. From the outset, it may be uncertain which tools should be withdrawn and when. As the economic context changes, accelerating the withdrawal of monetary stimulus and extraordinary tools may do more for the central bank's credibility than sticking to a predetermined withdrawal sequence—especially when the degree of economic uncertainty has declined materially and financial market functioning has fully normalized.

Some central banks committed to a certain sequence and speed of withdrawal of the tools to reduce both uncertainty for market participants and, in turn, unintended impacts on market functioning. Some central banks even tied the termination of QE to specific economic thresholds being achieved—adding to the potential inflexibility of the withdrawal process for extraordinary tools.[24]

In Canada, for example, macroeconomic dynamics had started to return to normal[25] and government bond markets had begun to function well several quarters before the Bank announced the beginning of the reinvestment phase in October 2021. In hindsight, the Bank could have got to the reinvestment phase faster. One thing that slowed down the withdrawal of QE stimulus was excessive prudence out of concern for the well functioning of fixed-income markets. Markets were likely resilient well before the Bank began to withdraw QE; therefore, they could have withstood earlier withdrawal, which would likely have resulted in a more appropriate monetary policy stance given the shifting inflation outlook.[26]

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[24] Another complication of exiting from a prolonged period of FG is that markets may then be especially uncertain about the central bank reaction function moving forward.

[25] The October 2021 MPR noted, "The Canadian economy is once again growing robustly, enabled by a high vaccination rate and the associated easing of containment measures" (Bank of Canada 2021, 11).

[26] See, for example, Chart 7 and the "Monetary policy tools" section in the July 2020 MPR. See also Johnson (2023), which outlines some lessons learned in the use of QE and other purchase facilities.

Eggertsson and Kohn (2023) highlight central banks' delay in increasing policy rates due their adherence to a prolonged policy unwind sequence. ECB President Christine Lagarde, in a 2023 interview with the *Financial Times* (Arnold 2023), observed:

> "'But what I regret personally is to have **felt bound by our forward guidance**,' she adds, referring to the commitment the ECB had given not to start raising interest rates until it had stopped buying billions of euros in mostly government debt, which it did slowly over the first six months of 2022. 'I should have been bolder'" (emphasis added).

In a 2024 speech, ECB Executive Board member Isabel Schnabel expressed similar concerns and echoed Orphanides' (2023) "Forward Guidance Trap" point:

> "But forward guidance is useful only when macroeconomic volatility is low—that is, when the risk of central banks having to renege on previous commitments is limited.
>
> In a high-volatility world, by contrast, forward guidance almost mechanically implies that central banks either take the risk of falling behind the curve or take a course of action that is inconsistent with their previous guidance" Schnabel (2024b).

This view, however, implicitly suggests that EFG has a certain unconditionality or rigidity. Yet, as we have argued, **the forward guidance trap can be broken by clearly emphasizing conditions and caveats from the outset**. To do so requires choosing a position along a potency-flexibility scale. English, Forbes and Ubide (2024, 21) argue that:

> "Clearer communication is needed to explain to the public that policies may need to be adjusted sooner than anticipated if the economic outlook materially changes. A sudden end to the use of tools such as guidance, asset purchases and yield curve control should not be seen as a failure of the approach, but rather as a feature of the instruments in an uncertain world."[27]

In a recent paper, Schembri and Globerman (2024, 4) stress the importance of the flexibility aspect of EFG:

> "[F]orward guidance at the ELB must be implemented in a flexible and nimble manner, especially when the economic outlook is highly uncertain and subject to change, in order to maintain the credibility of the central bank's inflation target. The credibility of the target and of the central bank itself is critical to the success of forward guidance as an additional monetary policy instrument."

If central banks allow for flexible EFG by communicating from the start the potential for deviations from the baseline scenario, then forward guidance does not automatically imply that central banks either take the risk of falling behind the curve or take a course of action that is inconsistent with

[27] For further context, see Evans (2024, 400): "The September 2020 forward guidance did say 'the Committee would be prepared to adjust the stance of monetary policy as appropriate if risks emerge that could impede the attainment of the Committee's goals'. Still, such a policy pivot would have been extraordinary."

previous guidance. That is a false dichotomy because there is room for EFG to evolve with events and the data. That is, central banks can offer conditional commitments.

b. Second lesson: The timing of the removal of EFG should be conditioned on a future economic state, but be transparent about forecasting uncertainty

Policy-makers can maintain valuable flexibility by conditioning the duration of the forward guidance commitment on the economic *outlook* rather than on data points or thresholds related to the *current* economic state. This outcome-based approach to EFG offers several advantages. Conditioning on an outlook—that is, on a projected variable—allows policy-makers to update the commitment horizon to indicate how long the policy rate would or could be expected to be at the ELB. Outcome-based EFG also explicitly acknowledges that the commitment is bounded by economic circumstances. How the EFG is communicated can also reduce the risk that the public perceives the commitment to hold rates at the ELB as a guarantee.

This outcome-based approach is better than one based solely on reaching thresholds for (perhaps multiple) current, observed economic variables (i.e., double or triple knockouts[28]). Another issue with conditioning solely on current observed variables is that these tend to be backward-looking. For example, if a central bank chose to condition on observed inflation being at or near the target (or within the target range) before removing its commitment to hold rates at the ELB, it is very likely that a substantial (rather than an anticipated modest) inflation overshoot would occur, given the long lags related to monetary policy. More importantly, if inflation temporarily moved into its control range (or reached the target), the central bank might be criticized for not ending the commitment even though the central bank sees, in its inflation outlook, that inflation is not set to remain **sustainably** in the range. While the use of variables for outcome-based EFG, such as a current, observed variable like inflation, does in principle react to the economic context, it does not filter out moves in inflation that are not expected to be sustained. However, this issue can be avoided by making it clear to the public that adjustments to the length of the commitment are based on changes to the *outlook* for inflation or economic slack.

Again, Schembri and Globerman (2024, 5) reach a similar conclusion:

> "…the policy commitment should be anchored on a macroeconomic projection produced and published by the central bank, demonstrating that the commitment should help achieve its mandate. A well-explained and communicated projection would enhance the credibility of the commitment."

Conditioning on an outlook variable is also better than time-based FG, particularly if such time-based FG is not conditional on evolving economic circumstances.[29] A commitment to keep the policy rate at the ELB until a key projection variable achieves some state would allow for the commitment

[28] As discussed, for example, in section 8a, which discusses the FOMC EFG experience in the United States.

[29] See the Reserve Bank of Australia example in section 8b.

horizon to vary with the anticipated economic outlook.[30] Examples of such measures include any that reflect projected labour market tightness (e.g., the vacancies-to-unemployment ratio) or, more generally, other measures aimed at assessing economic slack, especially those that try to account for potential aggregate supply shocks. To be clear, the important information to convey is not the projected degree of economic slack but rather the timing implied by the gap between the current measure of economic slack and the projected estimate of when that slack will be absorbed. The expected or estimated length of time for the ELB commitment is based on the accuracy of the currently observed or estimated measure of slack as well as the projected estimate of its absorption.

In theory, projected (core) inflation offers the ideal outlook-related commitment-horizon conditioning variable for an EFG. However, mainstream forecasting models for the inflation outlook invariably rely on estimates of the current and projected output gap and on equilibrium dynamics. The equilibrium dynamics depend on anchoring inflation expectations to a number, typically the inflation target, and depend on what are estimated to be flat Phillips curves, and thus are not very sensitive to the slack measures (e.g., output gap). So, projected inflation may not be the preferred variable. As mainstream central bank models change, this may change.

Although Bank of Canada communications about its EFG referred to the absorption of slack as the conditioning variable for sustainably achieving the inflation target, throughout the period the EFG was in effect, the Bank never definitively stated what it meant by slack. Nonetheless, starting in October 2020, the Bank tied the commitment horizon to the projection-based measure of the output gap reported in its *Monetary Policy Reports*.[31] In effect, this converted the broad, conceptual term "economic slack" into a very specific, baseline-estimated variable, the output gap.[32]

A criticism of the output gap's use as the sole or key measure of economic slack is that the output gap depends on an unobservable component (potential output). Thus, when the economy is affected by unique or rare shocks, particularly shocks that affect supply, estimates of potential supply are subject to even greater uncertainty than usual. The timing of when the output gap is expected to close is dependent on estimates of both the current and the projected output gap. This introduces two layers of uncertainty because both the current and the future output gap are unobserved and must be estimated. Even during more ordinary economic conditions, it is not clear how accurate the current assessment of the output gap is.[33]

Arguably, measures of labour market slack could provide a useful complement to measures of the output gap for gauging economic slack because the former are based on fewer assumptions (see Box 3 in the January 2022 MPR). This is because labour market slack estimates—

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[30] Specifically, a key projection variable that is likely to drive the underlying path for inflation or inflationary pressures on a sustainable basis, such as projected measures of economic slack.

[31] See, for example, Chart 17 in the October 2020 MPR (Bank of Canada 2020d) and discussion throughout the MPR.

[32] Note that in its MPRs, the Bank did mention it was gauging slack with a broad spectrum of indicators. Nonetheless, in its press release, the Bank tied EFG to the projected measure of slack. This implies that the measure in question was the output gap because most of the other potential indicators of slack are not projected.

[33] See Champagne, Poulin-Bellisle and Sekkel (2016) for staff research on this topic.

based on, for example, measures like the vacancy-to-unemployment ratio (v/u)—are not based on an estimated or unobserved variable of potential supply, unlike output gap estimates.

Ultimately, the estimate of the threshold level of this v/u ratio, which indicates movements from tight to slack labour markets, needs to be estimated as well. So v/u is not perfect either. **But projections of vacancies and unemployment have a concrete or observed starting point to rely on; these are observable, while the current level of the output gap is not.** At a minimum, any current assessment of slack should not be based solely on the estimated output gap but should also be confirmed or adjusted by other indicators of current economic slack, such as v/u, core inflation or business survey measures of capacity pressures.

Generally, outlook variables are projections that must be estimated. The disadvantage of basing any commitment horizon on outlook variables is that they are subject to uncertainty, particularly during crises.[34] However, as was the case with the Bank of Canada's use of economic slack as an outlook variable, this uncertainty is straightforward to acknowledge and to reflect in the estimated timing of the absorption of slack (or when inflation is sustainably at target). For example, the Bank initially said that slack would be absorbed some time over a one-year horizon, and then over half-year horizons. Using a calendar window over which the EFG commitment is expected to end reflects the inherent uncertainty surrounding an estimated measure of slack, especially during the pandemic when supply shocks played a substantial role in the economy.

Monetary policy committees do not usually condition their monetary policy decisions on a single variable, so explicitly and transparently conditioning an EFG commitment on multiple variables would be consistent with their usual practice. In addition, using multiple variables helps mitigate the issues with basing the commitment on a single unobserved variable, as noted above. However, from a communications standpoint, it is likely simpler to condition the EFG commitment horizon on a single variable or concept such as the output gap because that makes it easier to explain to the public how the commitment horizon is adjusted. Faced with a set of multiple measures of slack or underlying inflation, stakeholders are likely to try to figure out which measures carry greater importance, particularly when they offer conflicting signals.

c. Third lesson: A systematic approach to FG in ordinary times would facilitate effective EFG in extraordinary times

EFG may seem simple—*low for long*—but as we have shown above, implementing EFG involves projecting and, indeed, shaping future events; it is highly complex—full of feedback loops and communication challenges. The goal is to use EFG effectively to manage a crisis, but how should a central bank manage this complexity in doing so?

There are two main perspectives to consider: the committee member who drafts the EFG, and the member of the public who interprets it. The committee member could benefit from a

[34] Another disadvantage is that such measures are susceptible to perception that the central bank is shifting the goal posts. This is because there is more model-based uncertainty and, to some extent, more room for subjectivity. Anchoring estimates of economic slack to more observable measures should protect against such perceptions.

framework to think through the many aspects of EFG, including, but not limited to, our two suggested lessons above. The public could benefit from a better understanding of FG. That way, when the next crisis arrives, both groups will be prepared. This would mitigate both the risk of FG implementation mistakes, which several central banks experienced during the pandemic, and the risk of misinterpretation, which was also common. So central banks and the public would benefit from a more systematic approach to the formulation and communication of FG in normal times. There are three main aspects to this.

The first aspect of systematic FG would be to draft monetary policy communication with some form of monetary policy rule in mind. This does *not* imply mechanically following a Taylor rule. On the contrary, deciding on monetary policy is a highly complex process, which **cannot be described by a standard monetary policy (Taylor) rule**. The policy decision process involves a number of steps: synthesizing of large amounts of data and information; mapping those data and information to macroeconomic projections; (simultaneously/jointly) mapping those projections and information to a policy decision (including a projected policy rate path); and, finally, mapping that policy decision and information to communication. At all stages, these mappings are a blend of economic models and judgment. Not only this, but there are *many judgments*—those of the monetary policy committee and staff members—judgments that must ultimately be aggregated and then communicated.

The monetary policy reaction function is also constantly changing, which adds further complexity. This means that it is not possible to precisely estimate a monetary policy committee's reaction function. Yet, whether implicitly or explicitly, markets and forecasters do exactly that. And further, they tend to do so with some kind of linear monetary policy rule in mind. So bridges between this complex, true reaction function and the simplified, perceived reaction function are inevitable. Central banks can improve these perceived reaction functions by describing their own perceptions of the true reaction function. This cannot be done precisely or explicitly, but even broad descriptions communicated regularly would add value.

An additional problem is that the number of contingencies to which monetary policy might respond is effectively infinite. However, while it may not be possible to communicate a precise monetary policy reaction function to economic agents, giving them more and regular insight into how the central bank processes data on the state of the economy, which data is important to the monetary policy committee's decision, and how likely certain risk scenarios are judged to be could go a long way toward reducing the information asymmetry between a central bank and the public.

For example, suppose a simplified reaction function had only three components: (i) inflation projections, (ii) inflation response and (iii) additive judgment. First, the monetary policy committee could explain the time-varying *inflation outlook* (e.g., what drove any inflation projection revisions)—ideally with quantitative estimates. Second, the monetary policy committee could then explain whether or how its *response to that inflation outlook* has evolved (e.g., less tolerant of above-target projected inflation). Third, the committee could explain whether *judgment* was applied to the policy rate path for reasons not captured in the point-wise macroeconomic projections (e.g., an asymmetric

balance of risks to the inflation outlook).[35] Forward guidance, for example, is a channel through which judgment is regularly articulated.

The second aspect of systematic FG is to regularly issue FG. This would allow for an iterative process in which the central bank hones its ability to guide markets' and the public's perceptions of the central bank's reaction function, and in which the public continuously improves its understanding of the reaction function. For some time now, the New Zealand (since 1997), Norwegian (since 2005) and Swedish (since 2007) central banks have routinely published their projected policy rate paths while explaining what drove shifts in those paths. To our knowledge, none of these central banks had any significant issues with its FG during the pandemic, while many of their counterparts did.

Norges Bank, for example, includes a section called "Monetary policy stance and drivers behind the changes in the policy rate path" in each of its *Monetary Policy Reports*. This section includes a breakdown of the drivers behind the changes in the policy rate path, such as prices and wages, domestic demand and the exchange rate, since its last report. Decomposing movements in the policy rate projection is exactly how the public can gradually improve its understanding of the reaction function.

In Sweden, after regularly providing a policy rate projection, the Riksbank explained in its March 2024 *Monetary Policy Report* that: "The forecasts for the economy in the near term are therefore less uncertain. **The Executive Board can therefore predict the next few monetary policy decisions with somewhat greater accuracy**, even though these forecasts are also uncertain" (Sveriges Riksbank 2024, 9). So, we can glean best practices based on what our central bank counterparts have learned during their experiences.

The Federal Reserve provides regular FG—both quantitative (federal funds rate projections) and qualitative, verbal FG in its policy rate decision statements. The European Central Bank (verbal FG), Bank of England (verbal FG) and, indeed, the Bank of Canada (verbal FG) have also provided regular forward guidance (to varying degrees) in recent years.

So, should another crisis arrive, the implementation of EFG, which is more complex and more fraught than ordinary FG, will have a greater chance of success than it had in the past. EFG will have benefited from months or years of a learning cycle, or training, between the Bank of Canada, markets and the public that lays the groundwork for a smooth transition to the more complicated, nuanced and critical variant of FG, EFG.

To be clear, it is not solely the explanation provided by the central bank for the changes of the policy path from the last meeting that matters, but also simply the fact that the central bank has indeed updated the policy rate path due to the cumulated data since the last publication. This is important on its own, particularly because central banks may not be able to provide sufficiently comprehensive explanations for the changes to the paths. The act of drafting (and potentially but not necessarily achieving consensus) should also further discipline the monetary policy decision-making process.

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[35] A final component would be to more explicitly and more regularly explain the degree of inertia in the reaction function (i.e., gradual steps). Monetary policy committee members already regularly make comments about taking a "gradual approach."

Absent this information on the projected path of the policy rate, it is more difficult for markets and the public to approximate the current reaction function. In its *Monetary Policy Report*, the Bank of Canada provides projected paths for inflation and for economic growth, but the Bank does not provide a projected policy rate path underlying those.[36] Thus, the public *can* estimate the relationship between *historical* policy rate movements and *historical* macroeconomic (inflation and growth) projections.[37] But, without the regular dissemination of the policy rate path, the public will have more difficulty learning the relationship between *projected* policy rates and macroeconomic projections. The policy rate path would provide valuable additional information about how the central bank is *currently* reacting to data, which is especially important because the nature of such reactions is time-varying.

The third aspect of a systematic FG approach is to provide scenario analysis around the projected policy rate path. First, this makes it clear that the published path is not unconditional. A common counter-argument against publishing a policy rate path is that it leaves the central bank "boxed-in" and less willing and/or able to deviate from the previously published policy rate path. Yet, such (evolving) rate paths are dependent on the accumulated data to that point. Providing non-baseline path scenarios makes clear that, should data materialize in a manner consistent with an alternate scenario, the central bank would not follow the baseline path. Moreover, the risk scenarios would also help the public understand how the central bank would react and thus support the above-stated iterative learning process toward better understanding the central bank's reaction function.

For example, the Riksbank also sees value in scenario analysis:

> "The final chapter of the report, *Monetary policy analysis*, **shows the interest rate path during the entire forecast period, and also interest rate paths based on alternative scenarios for macroeconomic developments**. The forecasts for the policy rate further ahead become more uncertain as the probability of new shocks hitting the economy increases over time" (Sveriges Riksbank 2024, 9, emphasis added; see especially Figure 35).

Relatedly, in periods when EFG is being used, the provision of scenarios would become even more useful. Fry-McKibbin and Wilkins (2024, 35) note:

> "Regular use of cost-benefit and stress-scenario analyses would support decision-making under uncertainty by testing the efficacy and robustness of different monetary policy strategies. This is particularly important when considering extraordinary policy tools (e.g. yield curve control, quantitative easing (QE), time-based forward guidance and related exit strategies)."

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[36] The Federal Reserve does provide policy rate projections—one for each FOMC member. But, because each individual set of FOMC policy rate and macroeconomic projections is pooled together, one cannot map particular policy rate projections with particular macroeconomic projections. Instead, most rely on the median projection instead. See, for example, Gonzalez-Astudillo and Tanvir (2023). It is for this reason that some recommend connecting the dots (see Bauer, Pflueger and Sunderam (2024)).

[37] See Champagne, Poulin-Bellisle and Sekkel (2020).

Doing so on a regular basis would leave both the monetary policy committee and the public better prepared when the next crisis arrives, and if the need for EFG returns.

6 Conclusion

The policy rate may well reach the ELB again in the future. Should that happen, extraordinary forward guidance may be needed again. Engaging in FG-related time inconsistency would greatly undermine the central bank's ability to use EFG in the future. Credibility is paramount in the use of FG. In a recent paper, Ehrmann et al. (2024) conduct a survey on monetary policy communication and use former members of the Governing Council of the European Central Bank (ECB) as respondents. The respondents state that enhancing credibility and trust is viewed as *the most important objective of central bank communication*.

Beyond our recommendation to assign high value to FG credibility in the face of competing priorities, we make recommendations about the conduct of EFG in the *Lessons learned* section (section 5) to help improve the practice of using FG. First, monetary policy committees must continually emphasize that any EFG commitment is always bounded by the economic outlook. Second, central banks should condition the duration of any EFG commitment on the economic outlook rather than on the economic state. Finally, central banks and the public would benefit from a more systematic approach to the formulation and communication of forward guidance on an ongoing basis.

7 Appendix I: Types (or attributes) of forward guidance

State-contingent (outcome-based, data-dependent) **FG away from the ELB** is defined as a statement that provides new information about the central bank's monetary policy ***reaction function***.[38] Although some central banks have incorporated numerical thresholds,[39] triggers or knockout conditions into conditional FG at certain points in time, this is by far the exception to the rule, and success with the use of such precise forms of FG has been mixed.[40]

Time-contingent (calendar-based) **FG** provides information about the probable stance of monetary policy at a ***specific time*** in the future. **Qualitative** (open-ended) **FG** provides information about the ***direction, scale or approximate timing*** of upcoming policy rate movements. Qualitative FG can also be thought of as unconditional FG (relatively speaking; implicitly, any FG is always conditional on the inflation outlook).[41]

Commitment-based FG at the ELB is an extraordinary special case of FG that has been used by the Bank of Canada at the effective lower bound (known in the academic literature as *Odyssean* FG).[42] Although the definition is necessarily more blurry than sharp, what often distinguishes this kind of FG most of all is the use of commitment-based (often combined with time-contingent) language (e.g., "…conditional on the inflation outlook, [GC] commits to hold current policy rate until the end of the second quarter of 2010"). It was first introduced by the Bank in April 2009, and a variant was used again in July 2020.

The examples below show that these types of FG are very **frequently used together and are not mutually exclusive**. Each type can also be used with varying degrees of strength. It is therefore not surprising that Jain and Sutherland (2020) find that the reductions in *forecast dispersion* and *forecast error* are not limited to or concentrated within any one type of FG. Sutherland (2023) finds that it was not possible to detect any meaningful difference between the *influence* of each FG attribute over the level of interest rate expectations despite ample data. Rigorous research studying the effect of the different types of FG is scarce. One interpretation of the state of the literature so far is that there is not yet a body of rigorous evidence to suggest that one approach to FG is decidedly better than another—perhaps there never will be. For now, each approach has advantages and disadvantages, but inflation-targeting central banks have successfully used FG and policy rate projections in a range of manners.

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[38] Any language that simply reasserts the inflation-targeting mandate is not considered conditional FG because it does not provide any new information.

[39] This is sometimes referred to as threshold-based FG, which is a special case of state-contingent FG.

[40] Sutherland (2025) outlines a monetary policy reaction function framework that allows for more precise definitions of the various approaches to forward guidance.

[41] See Ehrmann et al. (2019) and Jain and Sutherland (2020) for evidence about the effects of different types or attributes of forward guidance.

[42] This definition comes from Campbell et al. (2012, 1): "We distinguish between Odyssean forward guidance, which publicly commits the FOMC to a future action, and Delphic forward guidance, which merely forecasts macroeconomic performance and likely monetary policy actions."

8 Appendix II: Other central banks' experiences with EFG during the pandemic

We look at the experiences of three central banks (and their monetary policy committees) using EFG during the pandemic: the US Federal Reserve's Federal Open Market Committee (FOMC), the European Central Bank's (ECB) Governing Council (GC) and the Reserve Bank of Australia's (RBA) Board (the Board). For the FOMC, we include some examples of EFG since the global financial crisis. The ECB GC had been using EFG before the pandemic given ongoing weak growth and low inflation since the European debt crisis. We also include the RBA experience to provide a peer open-economy central bank comparison, and because it is a noteworthy case study.

a. The Federal Reserve

We highlight two periods in which the FOMC used EFG. The first was in the aftermath of the global financial crisis starting in 2011, and the second was during the pandemic. Within these two separate periods of EFG, the FOMC adjusted the form of their EFG.

Post-financial crisis (2007–09) episode

In August 2011, the FOMC (2011) published time-contingent EFG:

> "…the Committee decided today to keep the target range for the federal funds rate at 0 to 1/4 percent. The Committee currently anticipates that economic conditions—including low rates of resource utilization and a subdued outlook for inflation over the medium run—are likely to warrant exceptionally low levels for the federal funds rate at least through mid-2013."

Before this point, the FOMC had lowered rates to the ELB during the global financial crisis and frequently used the following (or similar) phrasing until the introduction of the above (stronger) EFG:

> "The Federal Open Market Committee decided today to keep its target range for the federal funds rate at 0 to 1/4 percent. The Committee continues to anticipate that economic conditions are likely to warrant exceptionally low levels of the federal funds rate for some time" (FOMC 2009; for another example, see FOMC 2010).

On December 12, 2012, the FOMC shifted to using a new state-contingent version of its EFG that included multiple conditions:[43]

> "…the Committee decided to keep the target range for the federal funds rate at 0 to 1/4 percent and currently anticipates that this exceptionally low range for the federal funds rate will be appropriate at least as long as the unemployment rate remains above 6-1/2 percent,

[43] This was also alongside its time-contingent FG that was introduced January 25, 2012, in the form of the overview of FOMC participants' assessments of appropriate monetary policy (FOMC 2012a).

> **inflation between one and two years ahead** is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored" (FOMC 2012c, emphasis added).

This EFG remained in place until March 2014.[44] This (rare) type of FG became known as threshold-based FG and was also used by the Bank of England from August 2013 to March 2014.

Pandemic episode

On March 15, 2020, the FOMC took a qualitative and state-contingent approach to FG:[45]

> "The Committee expects to maintain this target range until it is confident that the economy has weathered recent events and is on track to achieve its maximum employment and price stability goals" (FOMC 2020a).

This was supported by QE and, in June, by time-contingent FG in the form of a substantially lower federal funds rate projection path in the Summary of Economic Projections (SEP) (compared with the last release in December 2019).

After having used the same EFG since March 2020, the FOMC changed its EFG significantly on September 16, 2020, to reflect its revised monetary policy framework, which came out in August 2020 and which put higher emphasis on maximum employment.

> "The Committee seeks to achieve maximum employment and inflation at the rate of 2 percent over the longer run. With inflation running persistently below this longer-run goal, the Committee will aim to achieve inflation moderately above 2 percent for some time so that inflation averages 2 percent over time and longer-term inflation expectations remain well anchored at 2 percent. The Committee expects to maintain an accommodative stance of monetary policy until these outcomes are achieved. **The Committee decided to keep the target range for the federal funds rate at 0 to 1/4 percent and expects it <u>will</u> be appropriate to maintain this target range <u>until</u> labor market conditions have reached levels consistent with the Committee's assessments of maximum employment and inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time**" (FOMC 2020c, emphasis added).

Eggertsson and Kohn (2023) conclude that:

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[44] On March 19, 2014, the FG was changed to: "In determining how long to maintain the current 0 to 1/4 percent target range for the federal funds rate, the Committee will assess progress—both realized and expected—toward its objectives of maximum employment and 2 percent inflation" (FOMC 2014).

[45] Central banks very frequently use more than one type of FG at once. The FOMC also systematically uses time-contingent FG (via FOMC participants' assessments of appropriate monetary policy) each quarter with the notable exception of the March 2020 meetings, although the projections returned in June 2020 (FOMC 2020b).

> "…the forward guidance introduced in September 2020 amplified the inherent inflationary bias of the new policy framework. This guidance linked interest rate increases to two conditions: inflation surpassing its target and employment achieving its maximum. Taken literally, this suggested an unchecked rise in inflation if employment did not hit its estimated maximum. Furthermore, we argue that the Federal Open Market Committee's interpretation of "maximum employment" understated the tightness of the labor market in 2021. This also contributed to a delayed policy response."

Bernanke and Blanchard (2023, 29) also acknowledge the role that FOMC monetary policy may have had in contributing to inflation:

> "Ultimately, as many have recognized, the inflation largely reflected strong aggregate demand, the product of easy fiscal and monetary policies, excess savings accumulated during the pandemic, and the reopening of locked-down economies."

Additionally, Eggertsson and Kohn (2023, 14) observe that:

> "Following the introduction of its 2020 Policy Framework, the Federal Reserve issued forward guidance both about its interest rate policy and its asset purchases. **These interacted because the criteria for stopping purchases needed to be met before the criteria for rate lift off and because the FOMC viewed completing asset purchases as necessary before raising rates.** Moreover, the Federal Reserve committed itself to announce well in advance when it would slow down asset purchases" (emphasis added).

Forward guidance and sequencing

Eggertsson and Kohn (2023, 14) explain how FOMC FG and QE interacted during the pandemic:

> "Following the introduction of its 2020 Policy Framework, the Federal Reserve issued forward guidance both about its interest rate policy and its asset purchases. These interacted because the criteria for stopping purchases needed to be met before the criteria for rate lift off and because **the FOMC viewed completing asset purchases as necessary before raising rates**" (emphasis added).

They also explain how this interaction led to a longer period of accommodative policy:

> "Moreover, the Federal Reserve committed itself to announce well in advance when it would slow down asset purchases. As we discuss, the guidance was presented as the implementation of the framework. However, while it was consistent with the framework, it went beyond what the framework required in setting criteria for tapering asset purchases and lifting off interest rates—that is, **kept policy more accommodative for longer**" (Eggertsson and Kohn 2023, 14, emphasis added).

They suggest that:

> "The FOMC thus tied its hands in two ways when it came to raising rates. This made the guidance more effective at keeping rate expectations very low, promoting financial conditions that helped to spur the rapid rebound in the economy. **But it also made it difficult to adapt to changing circumstances to deal with unexpectedly strong demand and high inflation in a timely way**" (Eggertsson and Kohn 2023, 18, emphasis added).

And, as we discuss in section 6 of this paper (Lessons), "Tapering, rather than an abrupt end to purchases, is to protect market functioning and, in theory, **need not conclude before rates are raised**" (Eggertsson and Kohn 2023, 19, emphasis added).

b. The Reserve Bank of Australia

On March 19, 2020, the RBA Board announced its own EFG: "**The Board will not increase the cash rate target until progress is being made towards full employment and it is confident that inflation will be sustainably within the 2–3 per cent target band**" (RBA 2020, emphasis added).[46]

The RBA (n.d.) published a review of its pandemic FG, and the Australian Government (2023) published a much broader independent review that also covered the pandemic FG.[47] Some of the key points of the **RBA's review** were as follows (emphasis added throughout):

- At the outset, "the RBA's stronger forward guidance worked to lower funding costs and support the economy early in the pandemic"—alongside other policy measures—"when the outlook appeared dire. The policy response helped shore up confidence during a period of significant uncertainty and disruption. It also provided insurance against very bad economic outcomes at a time when there was very limited scope to lower the cash rate further" (RBA n.d.).
- "The forward guidance was state-based [i.e., outcomes-based], but at various times **included a time-based element. This complicated the Bank's attempts to communicate the state-based nature of its policies and it could have done more to emphasise the conditionality of its statements** about the future path of the cash rate" (RBA n.d.).
- Specifically, Governor Lowe explained in an October 2020 speech that:
    - "The Board will not be increasing the cash rate **until actual inflation is sustainably within the target range**. It is not enough for inflation to be forecast to be in the target range. While inflation can move up and down for a range of temporary reasons, achieving inflation consistent with the target is likely to require a return to a tight labour market. On our current outlook for the economy—which we will update in early

[46] This EFG was also accompanied by a 0.25% reduction in the cash rate to 0.25%, the introduction of a yield target for three-year government bonds, a term funding facility that provided three-year funding to banks, as well as bond purchases to address market dislocation.

[47] Former Bank of Canada Senior Deputy Governor Carolyn Wilkins was part of a team of academics that conducted this Review of the Reserve Bank of Australia, which covered the past three decades, not just the pandemic period.

November—this is still some years away. **So we do not expect to be increasing the cash rate for at least three years**" (Lowe 2020, emphasis added).

- "The **time-based element of the guidance was very prominent in media and market commentary and came to dominate the interpretation of the forward guidance**. The RBA attracted extensive criticism when the cash rate was increased much earlier than implied by the conditional time-based guidance" (RBA n.d.). An example from February 2021:
    - "The Board will not increase the cash rate until actual inflation is sustainably within the 2 to 3 per cent target range. For this to occur, wages growth will have to be materially higher than it is currently. This will require significant gains in employment and a return to a tight labour market. **The Board does not expect these conditions to be met until 2024 at the earliest**" (RBA 2021, emphasis added).
- "The message about the likely **timing of future cash rate increases was complicated by the yield curve target**. The time-based element of guidance and the term for the yield target were mutually reinforcing. Neither were well suited to respond to the unprecedented global events. In particular, if the time-based aspect of the conditional forward guidance had been shortened or removed while the yield target was in place, it would have significantly affected the credibility of the yield target. Also, in retrospect, greater emphasis on upside risks might have led to an earlier decision to modify the time-based aspect of forward guidance" (RBA n.d.).[48]
- "The Bank sought to explain in some detail the economic conditions that would prompt an increase in interest rates. **The Bank had difficulty communicating the state-based conditions, such that they were not well understood**. In particular, the Bank emphasised that the outlook for wages was an important indicator for assessing whether or not inflation was 'sustainably within the target range'. This detail complicated the messaging, with many commentators interpreting the Board as having a wages target" (RBA n.d.).

Separate commentary was provided in the Australian Government's independent review:

- "Many central banks used forward guidance during the pandemic, although the RBA's calendar-based guidance design was different in several respects. **In contrast to most of its peers, the RBA offered guidance over a long time-horizon and did not update its guidance as the economic outlook changed** (Box 1.3). This made the RBA particularly vulnerable to unexpected (positive) economic developments. The Reserve Bank Board written materials also provided relatively little recognition of international experience that there was a risk of guidance being misunderstood (Committee on the Global Financial System 2019) or discussion of how to exit from the guidance should upside risks to inflation materialise" (Australian Government 2023, 47).
- "The RBA's response also reflected persistent errors in forecasting inflation and unemployment (Charts 1.6 and 1.7). **After many years of low inflation, the RBA and many other central banks paid insufficient attention to the upside risks, such as persistent supply chain**

[48] See also the RBA's *Review of the Yield Target*.

issues and inflation expectations, and relied too much on wage pressures as an advanced signal of persistent inflation pressures" (Australian Government 2023, 52).

- "However, the Review is of the view that aspects of the policy-making process also contributed. These include how risks were presented to the Reserve Bank Board and factored into decisions about monetary policy strategy, the extent of debate and challenge, and the approach to communication. For example, there was little discussion in Reserve Bank Board papers about **how to address the inherent inflexibility of a yield target and calendar-based forward guidance to changes in the economic outlook"** (Australian Government 2023, 52).
- "While the Reserve Bank Board provided conditions alongside this calendar-based guidance, **many in the public understood this to be a commitment**. The Review heard from people who interpreted the decision to increase interest rates in May 2022 as a 'broken promise'" (Australian Government 2023, 52).

c. The European Central Bank

In March 2016, alongside QE, the ECB adopted the following FG and sequencing:

> "[T]he Governing Council expects the key ECB interest rates to remain at present or lower levels for an extended period of time, and well past the horizon of our net asset purchases" (Draghi and Constâncio 2016).

It continued with FG until the pandemic. From October 2019 until June 2021, the ECB's FG was:

> "The Governing Council expects the key ECB interest rates to remain at their present or lower levels **until** it has seen **the inflation outlook robustly converge to a level sufficiently close to, but below, 2% within its projection horizon**, and such convergence has been consistently reflected in underlying inflation dynamics" (European Central Bank 2020, emphasis added here and below).

From July 2021 to June 2022, the ECB's Governing Council switched to slight variants of:

> "In support of its symmetric two per cent inflation target and in line with its monetary policy strategy, the Governing Council expects the key ECB interest rates to **remain at their present or lower levels until it sees inflation reaching two per cent well ahead of the end of its projection horizon and durably for the rest of the projection horizon**, and it judges that realised progress in underlying inflation is sufficiently advanced to be consistent with inflation stabilising at two per cent over the medium term. This may also imply **a transitory period in which inflation is moderately above target**" (ECB 2021a).

The switch to this new FG followed the ECB's 2021 strategy review (ECB 2021b).

To that point, the inflation target had been described as below 2% from 1998 and updated to below, but close to, 2% following its 2003 strategy review (Cecioni et al. 2021). In 2021, the ECB's monetary policy strategy statement provided an update:

> "The Governing Council considers that price stability is best maintained **by aiming for two per cent inflation over the medium term**. The Governing Council's commitment to this target is **symmetric**" (ECB 2021c, emphasis added).

Yet:

> "To maintain the symmetry of its inflation target, the Governing Council recognises the importance of **taking into account the implications of the effective lower bound**. In particular, when the economy is close to the lower bound, this requires **especially forceful or persistent monetary policy measures** to avoid negative deviations from the inflation target becoming entrenched" (ECB 2021c, emphasis added).

In early 2022, the ECB used commitment-based EFG, which it used in tandem with QE guidance:

> "**Any adjustments to the key ECB interest rates <u>will</u> take place some time after the end of the Governing Council's net purchases under the APP** [Asset Purchase Program] **and <u>will</u> be gradual**" (ECB 2022a, emphasis added).

This QE guidance often provided timelines, for example:

- "…the Governing Council will conclude net purchases under the APP in the third quarter" (ECB 2022a).
- "The Governing Council also intends to continue reinvesting, in full, the principal payments from maturing securities purchased under the APP for an extended period of time past the date when it starts raising the key ECB interest rates and, in any case, for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation" (ECB 2022a).

The ECB's Governing Council also adopted a notable tactic during the post-COVID-19 rate-hiking cycle, occasionally deviating from its usual approach of state-contingent FG to time-contingent FG:

> "Accordingly, and in line with the Governing Council's policy sequencing, **the Governing Council intends to raise the key ECB interest rates by 25 basis points at its July monetary policy meeting**" (ECB 2022b, emphasis added).

Once again, we can ask whether the FG and/or the QE–FG–policy rate sequencing contributed to high inflation. In a recent ECB working paper, Darracq Pariès, Kornprobst and Priftis (2024) evaluated how the euro area economy *would have* performed since mid-2021 under alternative monetary policy strategies. They used the ECB's main macroeconomic (DSGE) model to contrast actual past monetary policy with counterfactual (backward-looking, hypothetical) alternative strategies. The counterfactual alternative strategies differ in their "lower-for-longer" commitment and the ECB's tolerance for inflation and output volatility.

They find the following. Had the ECB known what conditions would prevail from mid-2021 onwards (perfect foresight), these alternative policy strategies imply that earlier monetary policy tightening could have prevented inflation from peaking at 10%, but the tightening that began in the third quarter of 2022 prevented higher inflation from becoming entrenched. However, when evaluating monetary policy based on real-time (quarterly vintages of) incoming data and projections (that is,

what could be known at the time), the alternative interest rate paths would be broadly consistent with the monetary policy the ECB actually chose.[49] This highlights the importance of choosing the right vantage point (*what was known at the time, not what is known now*) when evaluating the effect of FG.

Similarly, Wu, Xie and Zhang (2024) assess whether unconventional monetary and fiscal policy implemented in response to the COVID-19 pandemic in the United States contributed to the 2021–23 inflation surge and find that they did not.

9 Appendix III: Preserving credibility versus time inconsistency: Theory

A useful starting point is to observe that central banks do not have perfect credibility. So, we can ask the question, *How much more effective would forward guidance be if central banks were perfectly credible*? This allows us to gauge the effect of credibility (or lack thereof) on the efficacy of forward guidance.

We distinguish between two types of central bank credibility: *the perceived ability to hit the inflation target* and *the perceived likelihood to honour forward guidance commitments*. The academic literature, which we survey below, focuses on the former, but this note focuses on the latter.

Cole and Martínez-García (2023) estimate that the credibility of the FOMC's forward guidance announcements is relatively high, but anticipation effects are attenuated because the FOMC does not have *full* credibility.[50] Accordingly, output and inflation do not respond as favourably as in a fully credible counterfactual.

Using a standard New Keynesian model, Cole, Martinez-Garcia and Sims (2023) suggest that **inflation would have been higher, and the zero lower bound less of an issue, following the global financial crisis had each central bank (including the Bank of Canada) been more credible.** They also suggest that Canadian inflation would have started to decline quicker, and somewhat sooner, in 2022 had the Bank of Canada been fully credible. From this perspective, preserving credibility is paramount.

Why is credibility so important? Eggertsson and Woodford (2003) showed that forward guidance can help avoid a major recession once the central bank policy rate has reached the zero lower bound by **committing to maintain the policy rate at stimulative levels for *longer than would otherwise***

[49] This vantage point avoids hindsight bias (see Roese and Vohs 2012) and considers what could have been known at the time of the crisis.

[50] "If the central bank is perceived as trustworthy, households and firms are likely to internalize the announcements about future policy in their decisions today (anticipation effects). If not, the effect on the economy from forward guidance may not be as strong." Cole and Martínez-García (2021, 532).

be expected, which lowers expectations about future interest rates (both short-term and long-term).[51] This relies on credibility.[52]

But how much longer? Bilbiie (2019) shows that *optimal forward guidance* can consist of committing to a simple policy of keeping the policy rate at the ELB for a certain number of periods *after* a liquidity trap, and, after that period, reverting to the optimal policy now prevailing at the time. The number of periods is a function of the duration of the liquidity trap, its severity (the size of the financial disruption), and the slopes of the aggregate demand and supply curves.[53] The solution he provides strikes an intertemporal balance between the desired expansionary effect of easier monetary policy in the short run, and the undesirable excess inflation in the longer run. **This solution eliminates the aforementioned tension between preserving credibility and time inconsistency**. Note that the Bank of Canada's FG had similarities to this proposed approach: "The Governing Council will [commitment] hold the policy interest rate at the effective lower bound until economic slack is absorbed [e.g., liquidity trap ends] so that the 2 percent inflation target is sustainably achieved [not just setting monetary policy such that the Bank projects that economic slack is absorbed, but committing to keep monetary policy at the ELB for longer, i.e., "sustainably"]."

The solution also circumvents another potential problem with FG. Some might regard **forward guidance as good news** because it is perceived as a signal that the central bank will maintain an accommodative monetary policy. Conversely, some might regard **forward guidance as bad news** because it is a signal that the economy is worse than expected (Andrade et al. 2019). This proposed rule from Bilbiie (2019) circumvents this problem to an extent. The rule cannot be interpreted as a signal of the expected duration of the liquidity trap because it is agnostic about the length: the forward guidance is a simple function of the length of the liquidity trap measured ex post. The Bank's initial FG incorporated this idea.

An important qualifier comes from Levin and Sinha (2020), who study the FG at the ELB, with the COVID-19 pandemic in mind. They observe that, in August 2020, financial markets were pricing US short-term nominal interest rates to remain at the ELB for the next several years. Accordingly, FG would need to incorporate a very long time horizon. They outline a canonical New-Keynesian model with three modifications:

> "(1) expectations formation incorporates the mechanisms that have been proposed for addressing the forward guidance puzzle; **(2) the central bank has imperfect credibility in**

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[51] Strictly speaking, the authors refer to a conditional commitment to keep the central bank policy rate low enough (Bernanke and Reinhart, 2004) to return prices to an output-gap-adjusted price-level target. Hence, the length of the commitment is conditional on realized exogenous shocks.

[52] Bassetto (2019) shows that forward guidance is useful when two conditions are met: the central bank has some private information, and that private information is about the central bank's preferences or beliefs. By contrast, Campbell et al. (2019) show that poor central bank communications have contributed to macroeconomic volatility.

[53] The solution is for the central bank to announce that once the liquidity trap ends, the central bank will (commits to) keep the policy rates at the ELB for 0.5 × (Liquidity Trap duration × disruption size).

> **making longer-horizon commitments regarding the path of monetary policy;** and (3) the central bank may not have full knowledge of the true structure of the economy."[54]

In their model, the central bank announces EFG in the initial period when policy becomes constrained by the ELB, but private agents perceive a fixed probability that the central bank will renege on that commitment and raise rates (time inconsistency). "In this framework, providing substantial near-term monetary stimulus hinges on making promises of relatively extreme overshooting of output and inflation in subsequent years, and hence forward guidance has only tenuous net benefits and may even be counterproductive" (Levin and Sinha 2020).

The literature suggests that EFG is more powerful than FG. It also suggests that if a monetary policy committee does make a commitment, it should honour its commitment whenever possible to preserve credibility.

For instance, Gonzalez and Mortensen (2025) model the effects of FG and allow for time inconsistency in their model. Their results suggest that FG is less potent once people understand that central banks have an incentive to promise an expansionary future path of interest rates at the zero lower bound, but as soon as the economy leaves the ELB, to instead fulfill their actual mandate instead of sticking to the promised path of interest rates. So, breaking the commitment would exacerbate these effects in future. With the authors' chosen model calibration, the optimal length of forward guidance is 18 months under limited commitment, while it is one year if the central bank can commit.

As discussed above, it is worth considering moving toward the Bilbiie (2019) approach. A less extreme but related approach would be for a monetary policy committee to (again) use a longer time horizon as was done by the Bank of Canada's Governing Council in October 2020. Ehrmann et. al. (2019) report cross-country evidence showing that, in general, forward guidance mutes the response of government bond yields to macroeconomic news. However, calendar-based guidance with a short horizon counterintuitively raises it. The authors use a stylized model where agents learn from market signals to show that the public release of more precise information about future rates lowers the informativeness of market signals and, as a consequence, may increase uncertainty and amplify the reaction of expectations to macroeconomic news.

Using their model, Levin and Sinha (2020) show that imperfect credibility (and the probability of not honouring EFG) induces a significant deterioration in macroeconomic stability. The authors caution against overly long FG as it could lead to inflation overshoot.

Angeletos and Sastry (2020) ask, "Should policy communications aim at anchoring expectations of the policy instrument ('keep interest rates at zero until date τ') or of the targeted outcome ('do whatever it takes to bring unemployment down to y%')?" The authors study "how the optimal approach depends on a departure from rational expectations. People have limited depth of knowledge and rationality, or form otherwise distorted beliefs about the behavior of others and the

[54] The authors incorporate myopic expectations from Gabaix (2020) and imperfect common knowledge from Angeletos and Lian (2018).

general equilibrium (GE) effects of policy." They conclude that, "The bite of this distortion on implementability and welfare is minimized by target-based guidance if and only if GE feedback is strong enough. This offers a rationale for why central banks should shine the spotlight on unemployment when faced with a prolonged liquidity trap, a steep Keynesian cross, or a large financial accelerator."

Finally, and separately, simulations suggest that the Bank of Canada's sequencing of monetary policy tools was good. Using simulations in the Bank's projection model—the Terms-of-Trade Economic Model—to consider a suite of extended monetary policies to support the economy following the COVID-19 crisis, Zhang et al. (2021) find that the policy mix that delivers the best outcome for the Canadian economy calls for immediately implementing forward guidance and quantitative easing, followed by credit easing when containment measures are lifted.

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