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# Forward Guidance at the Effective Lower Bound: International Experience



by Karyne Charbonneau and Lori Rennison

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# **Forward Guidance at the Effective Lower Bound: International Experience**

by

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## Abstract

Forward guidance is one of the policy tools that a central bank can implement if it seeks to provide additional monetary stimulus when it is operating at the effective lower bound (ELB) on interest rates. It became more widely used during and after the global financial crisis. This paper reviews the international experience, based on the six central banks that have used forward guidance when operating at the ELB, in order to assess its effectiveness and the potential risks associated with its implementation. We distinguish between three distinct types of forward guidance (qualitative, time contingent and state contingent) and discuss the channels through which forward guidance operates. Overall, we find that forward guidance can be an effective tool at the ELB when clearly communicated and perceived as credible. Though evidence from the literature is somewhat mixed—since the specific effects vary across economies, episodes and type of guidance—it has generally been found to be effective in (1) lowering expectations of the future path of policy rates, (2) improving the predictability of short-term yields over the near term and (3) changing the sensitivity of financial variables to economic news. However, as with other monetary policy tools, the benefits of forward guidance need to be weighed against the costs. Those costs are mainly associated with potential loss of credibility and increased financial stability risks. Moreover, the international experience with forward guidance under conditions of negative ELBs and interest rates is limited to date.

*JEL classification: E43, E52, E58, E6*

*Bank classification: Monetary policy framework; Monetary policy implementation; Uncertainty and monetary policy; Transmission of monetary policy*

## Résumé

Les indications prospectives font partie des instruments de politique monétaire qu'une banque centrale peut mettre en place si elle souhaite procéder à un nouvel assouplissement de la politique monétaire dans un contexte où le taux directeur se situe à sa valeur plancher. Leur utilisation s'est généralisée durant et après la crise financière mondiale. Les auteures dressent un bilan de la situation à l'échelle internationale : afin d'évaluer l'efficacité des indications prospectives et les risques éventuels associés à leur usage, elles centrent leur analyse sur les six banques centrales qui ont eu recours à cet instrument lorsque le taux directeur a atteint sa valeur plancher. Les auteures différencient trois types d'indications prospectives (qualitatives, limitées dans le temps et assorties de seuils) et décrivent les différents canaux de fonctionnement de cet instrument. Dans l'ensemble, si elles sont expliquées de manière claire et jugées

crédibles, les indications prospectives peuvent être efficaces quand le taux directeur est à sa valeur plancher. Les données provenant de la littérature spécialisée sont quelque peu mitigées – les effets proprement dits variant selon les économies, les périodes et le type d’indications choisi –, mais les indications prospectives se révèlent en général utiles pour : 1) faire évoluer à la baisse le niveau anticipé du taux directeur, 2) améliorer la prévisibilité, dans un avenir proche, des taux de rendement à court terme et 3) modifier la sensibilité des variables financières à l’actualité économique. Pour autant, comme avec les autres instruments de politique monétaire, il convient de mettre en balance les avantages et les coûts. Ces coûts résident principalement dans la perte éventuelle de crédibilité et dans l’augmentation des risques entourant la stabilité financière. Par ailleurs, rares sont à ce jour les cas où l’on peut observer l’incidence d’indications prospectives dans des économies où le taux directeur et les taux d’intérêt sont en territoire négatif.

*Classification JEL : E43, E52, E58, E6*

*Classification de la Banque : Cadre de la politique monétaire; Mise en œuvre de la politique monétaire; Incertitude et politique monétaire; Transmission de la politique monétaire*

## 1. Introduction

Forward guidance is one of the policy tools that a central bank can implement if it seeks to provide additional monetary stimulus when it is operating at the effective lower bound (ELB) on interest rates.<sup>1</sup> Forward guidance refers to explicit statements by the central bank around the future path of interest rates. During and after the global financial crisis, as interest rates around the world fell toward zero, central banks turned to forward guidance as an important unconventional policy tool. Based on a review of the international experience, we can draw the following conclusions:

- Forward guidance can be an effective tool at the ELB when clearly communicated and perceived as credible
- While impacts vary across economies, episodes and types of guidance, the balance of international evidence supports that it can be effective in
  - lowering expectations of the future path of policy rates
  - improving the predictability of short-term yields over the near term
  - changing the sensitivity of financial variables to economic news (as an indication that markets perceive the guidance as binding)
- Many central banks have used forward guidance in tandem with other unconventional tools (such as quantitative easing, or QE), making it difficult to isolate its precise impact on the economy
- There is limited experience with forward guidance under conditions in which the ELB is negative

Section 2 reviews the central banks that have adopted forward guidance. Section 3 discusses how forward guidance works. Section 4 reviews the international evidence on its effectiveness, including the parameters that are relevant for success. Section 5 outlines the costs and risks associated with forward guidance. The final section offers some conclusions and identifies further avenues of research.

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<sup>1</sup> Until recently, the effective lower bound on interest rates was generally considered to be at a level just above zero (the zero lower bound, or ZLB). The view was that lowering the policy rate to zero or below would affect the effective functioning of financial markets. Recently, however, some central banks have introduced negative policy interest rates; for details, see Jackson (2015).

## 2. Central Banks of Many Major Economies Have Used Forward Guidance at the Effective Lower Bound

Following the global financial crisis, six central banks of major advanced economies have implemented extraordinary forward guidance when operating at the effective lower bound (**Table 1** and **Chart A1**). Canada introduced extraordinary forward guidance in 2009 in the form of a conditional commitment. In other cases, forward guidance was eventually combined with other unconventional tools, such as QE.

A number of other inflation-targeting central banks were publishing the expected path of interest rates prior to the crisis. Sweden continued to do so when interest rates reached the zero lower bound, at which point it added extraordinary forward guidance, along with QE and negative policy rates.<sup>2</sup>

The approaches taken by central banks to provide extraordinary forward guidance at the zero or effective lower bound have evolved through three stages (Mendes and Murchison 2014):

- Qualitative
  - provides no explicit indication of the timing or conditions under which policy may tighten in the future
  - example: “The policy rate will be maintained for an extended period”
  - pioneered by the Bank of Japan (BoJ) in 1999 and subsequently used by the Federal Reserve and the European Central Bank (ECB)
- Time contingent, subject to some degree of explicit or implicit conditionality
  - provides an explicit conditional commitment regarding the date at which the stance of policy would begin to change
  - example: “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”
  - pioneered by Canada in 2009; also used in Sweden and the United States
- State contingent (or threshold-based)
  - provides a precise threshold that must be met before the policy rate will be raised

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<sup>2</sup> This paper focuses on forward guidance as an unconventional monetary policy tool near or at the ELB. We therefore do not discuss further the other inflation-targeting countries that routinely publish the expected path of interest rates but have not implemented extraordinary forward guidance when at the ELB (i.e., Norway and New Zealand).



- example: “The committee 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 per cent”
- pioneered by the Federal Reserve in December 2012 and subsequently used by the Bank of England (BoE)

**Table 1: Central banks that have provided forward guidance near the ELB**

Central bank	Action	Usage
<b>Canada</b>	<b>Apr 2009–Apr 2010:</b> Time contingent. Indicated that the target rate would remain at its current level until a specific date, conditional on the outlook for inflation.	In isolation
<b>U.S.</b>	<b>Dec 2008–Jun 2011:</b> Qualitative. Indicated that policy rate would be maintained low for an open-ended time. <b>Aug 2011–Nov 2012:</b> Time contingent. Switched to more explicit indications on the future course of monetary policy until a specific date. <b>Dec 2012–Jan 2014:</b> State contingent. Provided guidance that the policy rate would be maintained, conditional on the evolution of the labour market and the level of projected inflation. <b>Mar 2014 onward:</b> Qualitative. As unemployment was approaching the threshold, the FOMC returned to a more qualitative approach.	Combined with QE  Combined with QE  Combined with QE  Combined with QE until Oct 2014
<b>Euro area</b>	<b>Jul 2013 onward:</b> Qualitative. Indicated that the policy rate would be maintained at present or lower levels for an extended period of time.	Used in isolation until June 2014  Combined with negative deposit rates after June 2014  Used at the ELB on policy rates after August 2014  Combined with QE after March 2015

(continued)

Central bank	Action	Usage
Japan	<b>Apr 1999–Jul 2000:</b> Qualitative. Indicated that it would maintain the zero interest rate policy until deflationary concerns were dispelled.	In isolation
	<b>Oct 2010–Mar 2013:</b> State contingent. Announcing it would maintain its near zero interest rate policy conditional on a variation in the CPI of 1% in 2012 and 2% in 2013.	In isolation
U.K.	<b>Aug 2013–Jan 2014:</b> State contingent. Declared that it wouldn't raise its policy interest rate or reduce its QE asset stocks at least until unemployment rate fell beneath a 7% threshold, or unless certain "knockouts" were breached. <sup>a</sup>	Combined with QE
	<b>Feb 2014 onward:</b> State contingent. The unemployment objective fulfilled, the BoE evolved its forward guidance by stating that there remains scope to absorb spare capacity further before raising the policy rate, and providing guidance about the path of policy when it does begin to raise (gradual and limited).	Combined with QE
Sweden	<b>Apr 2009–Jul 2010:</b> Time contingent. Giving a statement indicating that the policy rate was expected to remain low until autumn 2010.	Combined with negative deposit rates after July 2009
	<b>Feb 2013–Dec 2014:</b> Time contingent. Provided guidance regarding the timing of the policy rate evolution.	Combined with negative deposit rates after July 2014, and with policy rates at zero after October 2014

<sup>a</sup> For example, CPI inflation 18–24 months ahead should not be expected to exceed the target by more than 0.5%.

### 3. How Does Forward Guidance Work?

The various forms of forward guidance at the ELB seek to lower long-term nominal rates by increasing the expected duration at the lower bound and reducing uncertainty regarding the expected path of short rates.

Forward guidance should facilitate the transmission of monetary policy by improving the central bank's ability to manage expectations, if it is perceived by the public to be a credible commitment of the central bank. An important element of credibility is tying the forward guidance to the central bank's policy goal. If the central bank's priorities are unclear (i.e., confusion over whether the goal is to achieve low and stable inflation at all costs; to tolerate inflation above target in order to achieve a stronger recovery; to place financial stability considerations as equal, higher or lower priority), then the forward guidance has the potential

to be too vague and its impact smaller. Therefore, to be effective, the guidance must be clearly communicated and interpreted as intended by the central bank.

Forward guidance is expected to operate via (1) its impact on the term structure of interest rates, (2) the increased predictability of monetary policy and (3) a better anchoring of long-term inflation expectations.

### *Impact on the term structure of interest rates*

Forward guidance should enhance the central bank's leverage on the term structure of interest rates by allowing it to quantitatively affect the future expected path of policy rates.

This mechanism can be assessed by looking at changes to market expectations of short-term rates and long-term bond yields following forward guidance announcements. It has mainly been studied empirically by looking at futures on different maturity yields around the time of the announcement (e.g. Woodford 2013; Filardo and Hofmann 2014). Other approaches are based on regression analysis (e.g. Kool and Thornton 2012; Campbell et al. 2012) or vector autoregression models of the relationship between interest rates, inflation and unemployment (He 2010).

### *Predictability of monetary policy*

The information provided in forward guidance statements should reduce uncertainty about policy rates and the central bank's reaction function. This implies a reduced volatility of short-term rates, an improvement in market participants' ability to forecast short- and long-term rates, and a reduction in the cross-sectional forecast variance of forecasters.

The impact on volatility has typically been measured by comparing the realized volatilities on interest rate futures with and without forward guidance (e.g. Filardo and Hofmann 2014; Chang and Feunou 2013).

The improvement of market participants' forecasts has been measured using regression analysis on the difference between Consensus Economics forecast errors and a benchmark forecast error (e.g. Kool and Thornton 2012). Additionally, the Federal Reserve used the Survey of Primary Dealers (SPD) to look at the impact of policy guidance on the perceptions of the Fed's reaction function (Femia, Friedman and Sack 2013).

The cross-sectional forecast variance is measured using a normalized version (to account for the fact that variance is higher when interest rates are higher) of the cross-sectional standard

deviation of forecasters in the surveys (Kool and Thornton 2012).

### *Anchoring of long-term inflation expectations*

Forward guidance should reduce the sensitivity of longer-term interest rates to general macroeconomic news and increase sensitivity to specific indicators, particularly to state-contingent forward guidance.

The sensitivity is sometimes assessed using regression analysis of the change in market responses to data surprises, such as the difference in the actual non-farm payroll employment value and the survey value (e.g. Filardo and Hofmann 2014; Swanson and Williams 2014).

## **4. Empirical Evidence of Forward Guidance Effectiveness**

Table 2 summarizes the empirical evidence found in the literature for the effectiveness of forward guidance at the ELB. Overall, there is somewhat mixed empirical evidence in support of the effectiveness of forward guidance at the ELB. In particular, as Table 2 suggests, forward guidance tends to have short-lived effects on short-term rates, and its impact is larger when it is implemented on a targeted basis, clearly communicated and clearly tied to the central bank's policy goal.

It is important to highlight that there is inherent difficulty in identifying the exact impact of forward guidance along the above dimensions. Mainly, identification issues arise from the joint implementation of forward guidance with other unconventional measures.<sup>3</sup> Indeed, most central banks that have used forward guidance at their ELB have done so in conjunction with QE (see Table 1), rendering the estimation of separate effects difficult.

It should be noted that assessing the effectiveness of forward guidance on the term structure of interest rates is confounded not only by the problems of identification but also by the presence of country-specific factors and the reaction of markets:

- The literature suggests that the introduction of forward guidance has no impact on the term structure of interest rates for a country already publishing its policy rate path, although this evidence stems mainly from Sweden. As detailed below, this case can be partially explained by the way in which the guidance was provided by the Sveriges Riksbank and interpreted by financial markets.

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<sup>3</sup> See Kozicki, Santor and Suchanek (2011) for a discussion of the problem in assessing the effectiveness of various central bank measures.

**Table 2: Evidence on the effectiveness of forward guidance**

Criteria	Testable implication	Evidence at the ELB		Policy take-away
		Effective	Not effective	
Impact on the term structure of interest rates	Expectations of the future path of policy rates	<p><b>Sweden</b> for 2007–11, <b>US</b> (Kool and Thornton 2012)</p> <p><b>Canada</b> (Woodford 2013; He 2010)</p> <p><b>US</b> for 2008 to Sept 2012, <b>BoE</b> for Jul 2013, <b>ECB</b> (Filardo and Hofmann 2014)</p> <p><b>US</b> for 2007–11 (Campbell et al. 2012)</p>	<p><b>Sweden</b> after 2009 (Woodford 2013)</p> <p><b>US</b> for Dec 2012–13, <b>BoJ</b> (Filardo and Hofmann 2014)</p>	<ul style="list-style-type: none"> <li>• Effective when perceived as credible</li> <li>• Indication of a diminishing effect</li> <li>• No additional benefit if already publishing policy rate path</li> </ul>
Predictability, clarity	Volatility of short-term rates	<p>One-year horizon, for <b>ECB, Federal Reserve, BoE and BoJ</b> (Filardo and Hofmann 2014)</p> <p><b>Canada</b> (Chang and Feunou 2013)</p>	<p>Two- and five-year horizons for <b>ECB, Federal Reserve, BoE and BoJ</b> (Filardo and Hofmann 2014)</p>	<ul style="list-style-type: none"> <li>• Improves predictability of short-term yields for short (one-year or less) horizons</li> <li>• Mixed evidence for the US prior to the introduction of time-contingent forward guidance</li> </ul>
	Improved forecast	<p><b>Sweden</b> for short-term yields for 2007–11 (Kool and Thornton 2012) and <b>US</b> for SPD perception of Fed’s reaction function (Femia, Friedman and Sack 2013)</p>	<p><b>Sweden</b> for long-term yields, for 2007–11 and <b>US</b> for 2008–11 (Kool and Thornton 2012)</p>	
	Cross-sectional forecast variance	<p><b>Sweden</b> for 2007–11 (Kool and Thornton 2012)</p>	<p><b>US</b> for 2008–11 (Kool and Thornton 2012)</p>	
Anchoring of long-term inflation expectations	Responsiveness of long-term yields to news	<p><b>US</b> 10-year yields (Swanson and Williams 2014)</p> <p><b>BoE and ECB</b> 3-month futures at one- and two-year horizons, <b>US</b> one-year futures and <b>US</b> 10-year yields after 2012 (Filardo and Hofmann 2014)</p>		<ul style="list-style-type: none"> <li>• Evidence in support of lower responsiveness to news in general</li> <li>• Increased responsiveness to threshold-relevant news</li> </ul>

- The largest impact of forward guidance is typically measured after it is first implemented. This can be an indication of a diminishing effect, but it could also be a reflection of the increasing difficulty in measuring the impact. Market participants come to expect changes in the forward guidance, and those changes are therefore partially priced in prior to any subsequent central bank announcement, reducing immediate measurable impacts (Femia, Friedman and Sack 2013). An example of this is the case of England in the summer of 2013. If futures rates did not fall following the formal introduction of forward guidance by the Bank of England in August 2013, it may be because they fell in July 2013 when the BoE Monetary Policy Committee raised concerns about the appropriateness of market expectations for future policy rates.

Through its impact on financial variables, forward guidance should have an impact on real variables. The literature on this topic, however, remains very scarce. Some evidence has been gathered from surveys. For instance, the Bank of England, following the announcement of forward guidance, conducted surveys of businesses and households for indirect evidence of the effects on confidence levels and spending and hiring plans. They found that guidance had a greater impact on companies than on households (Bank of England 2014).

Using Terms-of-Trade Economic Model (ToTEM) simulations, Mendes and Murchison (2014) show that state-contingent forward guidance can reduce the variance of the output gap and inflation by 8 per cent and 11 per cent, respectively.

### *Conditions for effectiveness: the example of Canada versus Sweden*

The degree to which the results of forward guidance are sensitive to how that guidance is implemented is highlighted by the contrasting examples of Canada and Sweden in April 2009. On 21 April 2009, both countries made announcements intended to shift down the anticipated forward path of rates, with opposite results: the Bank of Canada achieved the desired impact, while the Sveriges Riksbank saw the rate path shift up. Important differences between the two central banks can help explain this divergence.

First, the policy rate in Canada was moved to its ELB of 25 basis points, while the Riksbank changed its policy rate from 1 per cent to 0.5 per cent. Second, historically, the Bank of Canada had been relatively more successful than the Riksbank at keeping inflation on target (Svensson 2013), and therefore might have had greater credibility. Third, and perhaps most importantly, Sweden had been publishing the path of its repo rate since 2007, thereby routinely using forward guidance, whereas April 2009 marked the introduction of time-contingent forward guidance in Canada (a departure from the qualitative forms of forward guidance used in the

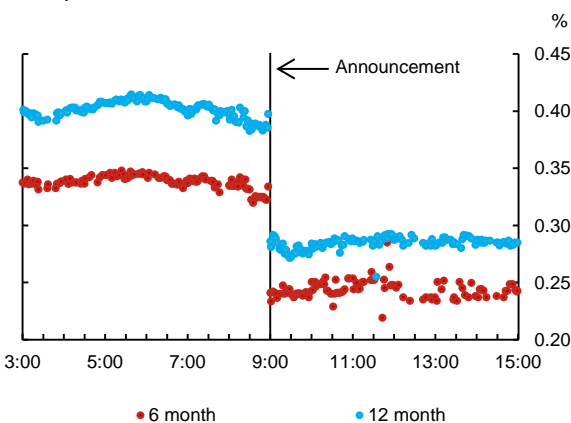
past). As detailed in Woodford (2013), the specificity of the language used by the Bank of Canada led to a “clear example of interest-rate expectations being changed by explicit forward guidance from a central bank” (see Chart 1a).

The Sveriges Riksbank, while cutting the repo rate to 50 basis points and releasing a projected path that showed the rate at that level through the end of 2010, also announced its intention to keep the policy rate “at a low level” until 2011 and stated that “traditional monetary policy [had] largely reached its lower limit.” This had the opposite effect of the one anticipated: the forward path of rates shifted up (Chart 1b). Prior to the announcement, market participants anticipated further cuts in the repo rate. As detailed in Woodford (2013), these expectations were changed by the combination of the release of a flat projected path and the language used by the central bank. It appears that market participants were not only convinced that rate cuts were less likely in the near term, but also viewed the announcement as revealing that the Sveriges Riksbank’s ELB was higher than they had supposed, thereby raising the entire expected path. Moreover, the central bank’s statement lacked the clear, specific commitment of its Canadian counterpart. To reinforce its conditional commitment, the Bank of Canada also made a one-year funding commitment, which likely contributed to the effectiveness of the forward guidance.

This example highlights some of the challenges and potential risks associated with forward guidance: if such guidance is not clearly communicated, it can produce an effect that is the reverse of the desired stimulus.

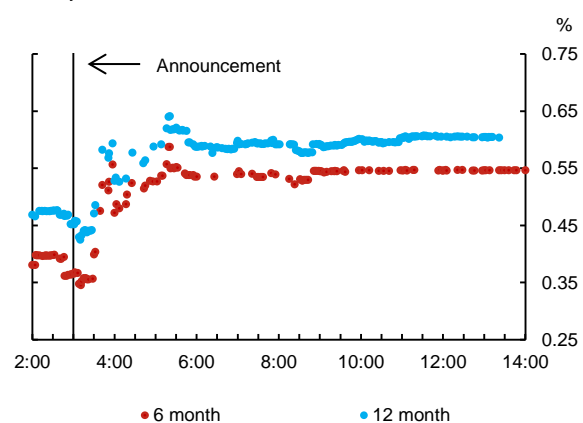
**Chart 1: Overnight index swap rates on 21 April 2009**

**a. Canada**  
Intraday data



Source: Bloomberg Observations from: 3:00 AM EST to 3:00 PM EST

**b. Sweden**  
Intraday data



Source: Bloomberg Observations from: 2:00 AM EST to 2:00 PM EST

## 5. Potential Costs Associated with Forward Guidance

The costs of forward guidance are mainly associated with potential loss of credibility and increased financial stability risks.

### *Loss of credibility*

Forward guidance exposes the reputation and credibility of a central bank to several sources of risk, depending on the type of forward guidance used. Any adjustments or deviations from prior statements, which may not be completely understood by the public, can be perceived as a breaking of commitment and thus hurt the central bank's reputation.

In the case of time-contingent forward guidance, the explicit use of conditionality (i.e., conditional on the outlook for inflation) can reduce the risk of appearing to break a commitment. At the same time, explicit conditionality has the potential to be viewed as diminishing the potency of the initial commitment, if the exit clause is seen as vague or easy to activate. The inherent time inconsistency of time-contingent forward guidance also creates a credibility challenge: if the public believes that the central bank has incentives to renege on its promise, it can limit the effect of the forward guidance on market expectations.

State-contingent forward guidance is somewhat less sensitive to time inconsistency, but still carries risks. The choice of threshold variables can be interpreted as a fundamental change in monetary policy goals. For instance, using an unemployment-based threshold can hurt the credibility for price stability. This can lead to more policy uncertainty at a time when reducing such uncertainty is a priority. The BoE added inflation-related knockouts, for example, to its forward guidance statements, in an effort to make it clear that inflation remained the Bank's policy goal.

State-contingent forward guidance is also sensitive to the choice of the threshold. If the threshold is met before the central bank believes it is appropriate to begin to raise policy rates, the forward guidance may need to evolve. For example, the Bank of England (BoE) initially used an unemployment threshold of 7 per cent in their guidance statement in August 2013. The unemployment threshold was attained more quickly than the Bank had forecast. The guidance was adjusted in February 2014 to a broader, and less-measurable, measure of economic health (economic slack) and to focus on the eventual path of rate rises (gradual and limited). The change in the Bank's guidance led to the view, at least in the press, that the BoE had given an initial misleading impression of how long rates would remain low. If a change to a threshold is



not clearly communicated, or in the extreme case that a central bank's forward guidance continuously evolves, markets may begin to question the credibility of any given threshold.

### *Increased financial stability risks*

Unconventional monetary policy tools have the potential to lead to financial stability risks. There are diverse dimensions along which forward guidance can pose risks to financial stability:

1. Complacency of market participants to form expectations due to their narrow focus on the central bank's forward guidance can lead to disruptive market reactions to changes in the guidance.
2. Increased volatility due to "one-way bets": when the central bank commits to not raising rates for a period of time, this gives markets a "one-way bet" around which to position themselves.<sup>4</sup> The longer forward guidance is in place, the more this position will be leveraged. The return to "two-way trading" accompanied by a change in the guidance will then lead to increased volatility. Making the guidance explicitly state contingent should mitigate this risk by creating uncertainty about when economic conditions will satisfy the threshold.

As with other unconventional monetary policy tools, forward guidance can also increase the risk that adverse short-term financial market developments become a distraction from monetary policy's primary responsibility of maintaining price stability. This risk could manifest itself in the form of undue delays in policy normalization, or it could cause an imprudent reach for yields and unhealthy accumulation of financial imbalances (Filardo and Hofmann 2014).

## **6. Conclusion and Future Direction**

In this paper, we reviewed the international experience to assess the effectiveness and potential risks associated with the implementation of forward guidance at the ELB. We distinguished between three distinct types of forward guidance (qualitative, time contingent and state contingent) and discussed the channels through which forward guidance operates.

Overall, we found that forward guidance can be an effective tool at the ELB when clearly communicated and perceived as credible. We highlighted the importance of these implementation requirements by contrasting the examples of Canada and Sweden in April 2009, when both countries made announcements intended to shift down the anticipated

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<sup>4</sup> See Poloz (2014) for more details on this risk.

forward path of rates, with opposite results. Though evidence from the literature is somewhat mixed, forward guidance has generally been found to be effective in (1) lowering expectations of the future path of policy rates, (2) improving the predictability of short-term yields over the near term and (3) changing the sensitivity of financial variables to economic news. Through its impact on financial variables, forward guidance should have an impact on real variables. The literature on this topic, however, remains very scarce and inconclusive. As we highlighted, isolating the precise impact of forward guidance is difficult, not only because of identification problems, since it is often used in conjunction with other unconventional monetary policy tools, but also due to the presence of country-specific factors and the extent to which the guidance deviates from the expectations held by markets prior to the announcement.

As with other monetary policy tools, the benefits of forward guidance need to be weighed against the costs. Those costs are mainly associated with potential loss of credibility and increased financial stability risks. Although time- and state-contingent forward guidance can help mitigate the credibility risks, international experience illustrates the potential difficulties associated with both the choice of thresholds and their possible subsequent change, as well as the importance of tying the guidance to the central bank's policy goal to avoid creating additional uncertainty.

Future research will continue to study the criteria relevant for the timing of forward guidance implementation. In particular, since the international experience with forward guidance under conditions of negative interest rates is limited to date, the trade-offs between the costs and benefits of using the tool in these situations will need to be investigated. Specifically, expectations that negative interest rates will be persistent could encourage financial innovations and a shift from central bank deposits into cash, undermining their effectiveness.

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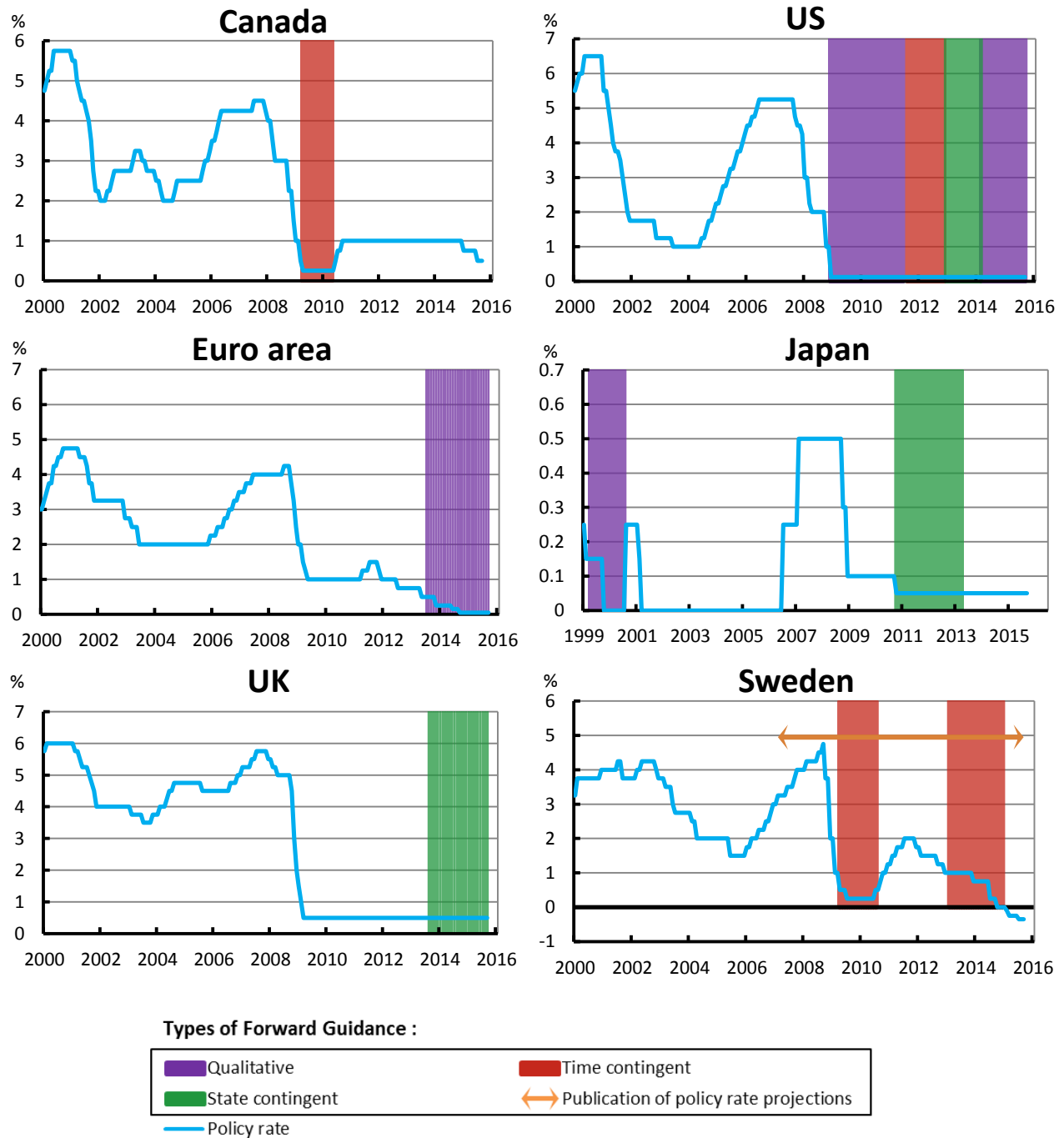
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## Appendix

**Chart A1: Policy rates across countries and forward guidance at or near the ELB**



Source: National central banks via Haver Analytics

Last observation: September 2015