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Abstract

This paper proposes to assess the usefulness of central banks forward guidance since the start of the global economic crisis. Using a novel approach, the Wordscores methodology, we reveal that since 2009, central banks do provide a temporal guidance of their accommodative policy that can be relied on and expected. Central banks communication thus gives important insights to financial markets about the persistence of their unconventional measures and in particular about the occurrence of an exit strategy.

Keywords: central bank communication, monetary policy, forward guidance.

JEL classification: E52, E58

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1   Introduction

Through forward guidance, central banks try to influence expectations of financial markets by communicating about their future policy, as a consequence, central bank watchers, financial media and market participants pay considerable attention to central bankers' statements. Forward guidance has thus become an important tool for central banks, more and more described as the art of managing expectations, since it can enhance the predictability of monetary policy decisions and helps achieve central bank's macroeconomic objectives. Most of the empirical studies that dealt with the predictability of central banks' statements refer to central banks from developed economies, such as the ECB, or the Fed. There is a broad consensus that these central banks' communication policy contains forward guidance and move financial markets in the intended direction (Musard-Gies, 2006; Willhemsen and Zaghini, 2011; Ehrmann and Fratzscher, 2009). Carlson et al. (2006) find that the communication framework built by the FOMC improved the public's ability to predict interest rate decision. Rosa (2009) shows that the tone of central bank statements is an important explanatory variable of future changes in the ECB main refinancing rate, while Gerlach-Kristen (2004) shows that the voting record of the Bank of England Monetary Policy Committee helps predict future policy rate changes.

However, the recent economic crisis has brought further challenges for these central banks in light of the uncertainties and the lack of confidence in financial markets, making their forward guidance more crucial than ever for the success of their monetary policy. Following this line of thought, Campbell et al. (2012) introduce a new term to define the practice of forward guidance since the start of the global economic crisis. They describe it as being "Odyssean forward guidance", which is the central bank's commitment to deviate from the established policy rule at the point in the future when the policy rate is normally expected to rise above zero. The commitment is to keep the interest rate at zero longer than the policy rule would suggest. The reason central banks use "Odyssean forward guidance" is because they have lost the ability to ease policy through the normal channel when the interest rate is constrained at its Zero Lower Bound (ZLB). The objective of forward guidance at the ZLB is thus to reduce uncertainty, thereby lowering interest rate volatility and through this channel possibly also risk premia (Filardo and Hofmann, 2013). Several papers argue that such forward guidance can raise output in that situation by lowering the expected future policy rate (Campbell et al., 2012; Eggertsson and Woodford, 2003; Krugman, 1998; Levin et al., 2010; Nakov, 2008; Walsh, 2009; Werning, 2011; Woodford, 2012). Garvin et al. (2013) provide a theoretical modeling of the stimulative effect of central bank forward guidance when the nominal interest rate is stuck at its ZLB. They show that it lowers the expected nominal interest rate and increases current consumption.

However, to the best of our knowledge, no study has yet empirically assessed the accommodative stance of central banks' forward guidance since the start of the global economic crisis through the central banks own discourses. In this paper, we do this for four central banks: the European Central Bank, the Federal Reserve, the Bank of England, and the Bank of Japan. Relying on their official policy statements, this paper proposes to fill the gap of the literature by using the

Wordscores approach introduced in section 2. In section 3, we outline the results. The last section concludes.

2 The Wordscores approach

2.1 The methodology

Given that forward guidance effectiveness also requires that it is clearly communicated to the public, we use the Wordscores methodology to assess the content of central banks' forward guidance since the onset of the global economic crisis. Introduced by Laver et al. (2003), this technique, using computerized content analysis, compares the patterns of words used in a set of "reference texts" with known policy positions, with words contained in "virgin texts", to estimate their respective policy positions. Words are then treated as data, rather than something to be "interpreted" by agents (Krippendorff, 2004), based on the assumption that the relative frequencies of the use of specific words provide information on monetary decisions. However, the meaning of a specific word often depends on the context in which it is used. For instance, while the word "growth" appears to be a positive signal, the phrase "slow growth" does not. Therefore, we rely on two-word combinations of a noun and an adjective in this analysis, such as "lower inflation" or "higher unemployment". This approach differs notably from previous methods as it does not need to use predefined coding dictionaries as Bligh and Hess (2010), nor subjective judgments by human coders as in Bulir et al. (2010). The reliability of this approach is enhanced since the human factor is removed from the coding process. Wordscores can be implemented using a command line version for Stata[1].

This technique requires estimates of the positions of the "references texts", for example, using a dimension tightening/easing. Wordscores then estimates the score of a two-word combination, based on its relative frequency in "reference texts" followed by a tightening/easing monetary policy. These combinations can be thought of as signals that will serve as the basis for estimating policy stances of the "virgin texts".

The Wordscores methodology is defined as follows (Laver et al., 2003):

$$
\begin{aligned}
Probability_{w,r} &= \frac{Frequency_{w,r}}{\sum_r Frequency_{w,r}} \\
wordscore_w &= \sum_r Probability_{w,r} \times Value_r
\end{aligned}
\tag{1}
$$

where w denotes a two-word combination in "reference text", r denotes "reference text", and $Value_r$ denotes the assigned value of the "reference text".

For instance, assume that the two-word combination "high vigilance" appears 10 times in a "reference text" followed by a tightening policy[2] and 2 times in a "reference text" followed by

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[1]For more details on the implementation of the method, see http://www.tcd.ie/Political_Science/wordscores/.
[2]denoted with a value of (+1)

an easing policy[3]. Then, the probability of "high vigilance" in a tightening "reference text" (i.e., $Probability_{(w:high\ vigilance,r:tightening)}$) will be 0.84 ($= \frac{10}{10+2}$), and the probability of "high vigilance" in an easing "reference text" (i.e., $Probability_{(w:high\ vigilance,r:easing)}$) will be 0.16 ($= \frac{2}{10+2}$). Using these probabilities, we calculate the wordscore of "high vigilance" as follows:

$$wordscore_{(w:high\ vigilance)} = Probability_{(w:high\ vigilance,r:easing)} \times Value_{(r:easing)}$$
$$+ Probability_{(w:high\ vigilance,r:tightening)} \times Value_{(r:tightening)}$$
$$= 0.16 \times (-1) + 0.83 \times (1) = 0.68$$

Therefore, if a "virgin text" contains the combination "high vigilance", Wordscores assumes that it contributes to 0.68 to the "virgin text's" estimation policy. Point estimates on the policy dimension are generated for "virgin texts", computed as the mean of the scores of the combinations, weighted by their relative frequencies within those texts.

Finally, it is crucial for the validity of this approach to select the appropriate "reference texts". They should provide enough information on the different policies dimensions for which one would like to evaluate the ones of the "virgin texts". We thus consider central banks' statements during the period 1999-2008 as "reference texts", first because there has been enough variations in terms of the number of policy changes, the direction of changes, and changes in the central banks' communication strategies and vocabulary as well, and second because most of the central banks were confronted to the ZLB from that period[4]. These "reference texts" thus fulfill the prerequisites suggested by Laver et al. (2003). Next, the aim is to estimate the policy position of central banks' statements ("virgin texts") from 2009 until January 2014, and thus to reveal the content of their forward guidance since the start of the global economic crisis.

Wordscores requires the reference texts to be coded. Given that we are interested in the content of central banks' forward guidance, we rely on the central banks' policy decision at time t+1 to code central banks' statement at time t. For instance, in December 2005, the ECB has increased it's main refinancing rate of 0.25 basis point, the statement of the ECB on November 2005 is then coded +0.25. Therefore, we assess the direction of central bank's policy rate at time t+1 following the words contained in its statement at time t. Then, Wordscores computes the policy decision of the ECB in January 2009 by analyzing the words contained in the ECB's statement of December 2008.

2.2 Data

In the wake of the global financial crisis, the Federal Reserve (Fed), the European Central Bank (ECB), the Bank of England (BoE) and the Bank of Japan (BoJ) adopted "Odyssean forward guidance" on policy rates. Except for the BoE that has an explicit inflation target, and the BoJ

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[3]denoted with a value of (-1)

[4]Except for the Bank of Japan that has adopted forward guidance in the context of its zero interest rate policy in 1999.

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that has adopted an inflation targeting regime of 2% following government's pressures at the end of 2012, the ECB and the Fed have not adopted an explicit inflation target strategy for the period under review. As such, they can be considered to have to manage their communication policy more efficiently than targeting central banks whose communication can be more easily focused (Gürkaynak et al., 2006; Mishkin and Schmidt-Hebbel, 2007). Moreover, in our view, the BoJ is particularly interesting: first, because the creeping deflation has led it into the Zero-Lower Bound region much before the two others and, second, because of its sudden strategic change since December 2012- related to the "Abenomics" deflationary program endorsed by its new chairman.

The method is implemented on this sample using statements that are considered to be a relevant source of information for central bank watchers, hence, these latter may be different across central banks. Then, one might argue that we compare "apples and pears" if we consider different communication tools, but it is worth nothing that for some central banks, the structure of communication instruments such as press releases or post-meeting statements have evolved through time due to changing communication strategies (e.g., for the BoJ), thereby rendering the Wordscores analysis inaccurate if used (cf. Section 2.1). We then only consider communication tools that have a consistent structure and are used in the same setting (Jansen and de Haan, 2010), whatever the economic environment throughout the analyzed period (1999-2014).

For the ECB, we consider the editorials of the Monthly Bulletin, as they contain an explanation of why interest rates were changed or not, plus a summary statement of the Governing Council's view of the economy, hence, self-containing the information released by the President introductory statements. For the FED, we rely on the Federal Open Market Committee post-meeting statement, as it contains the Committee's view about future economic development and an outlook on the future federal funds target rate. For the Bank of England, we use the Monetary Policy Committee minutes, which deliver an assessment of the economic conditions in the national and international markets, and reflect the policy actions conditional upon future developments of macroeconomic variables. For the Bank of Japan, we use the Monthly Report of Recent Economic and Financial Developments, which contains a summary of economic and financial developments, and form the basis of the decision on the guideline for money market operations.

3 Results

Figures 1 to 4 below reveal the content of central banks forward guidance from 2009 until the beginning of 2014, showing the results of the Wordscores estimates as well as the interest rates implemented by the central banks under review, the main refinancing rate for the ECB, the federal funds rate for the Fed, the BoE and the BoJ interest rates.
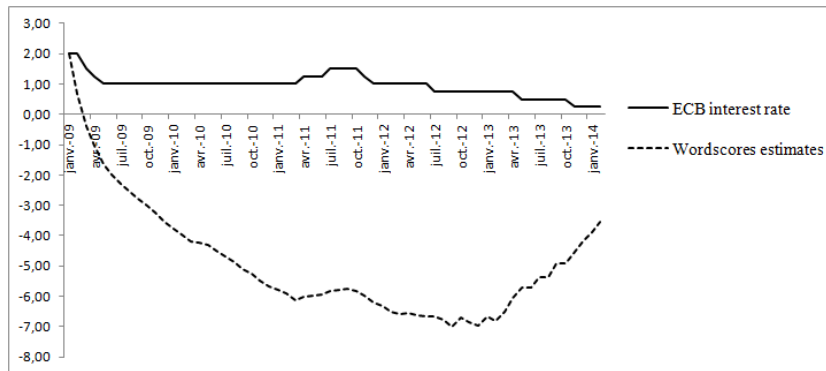
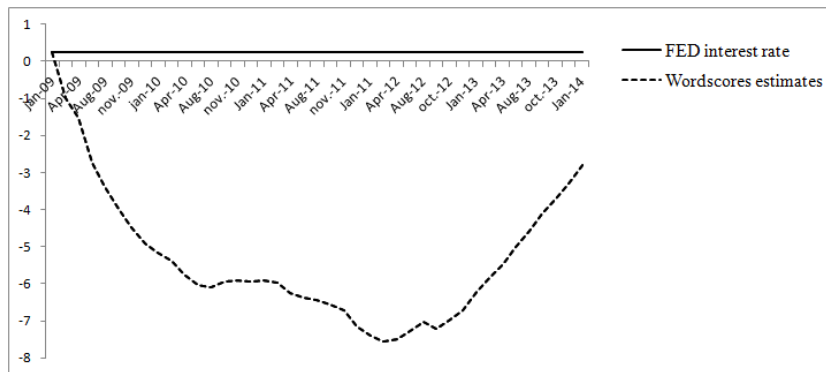Figure 1: ECB interest rate and cumulative Wordscores estimates

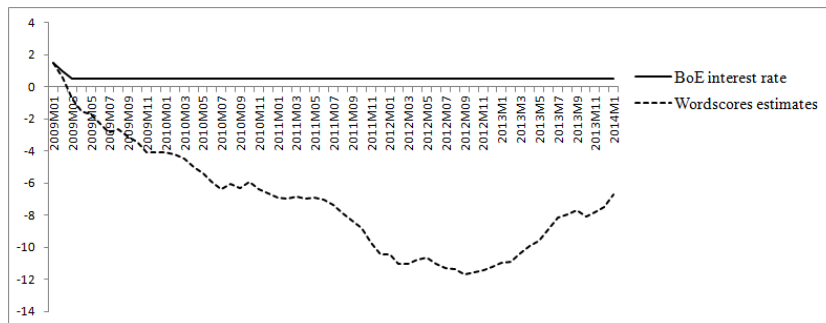Figure 2: FED interest rate and cumulative Wordscores estimates

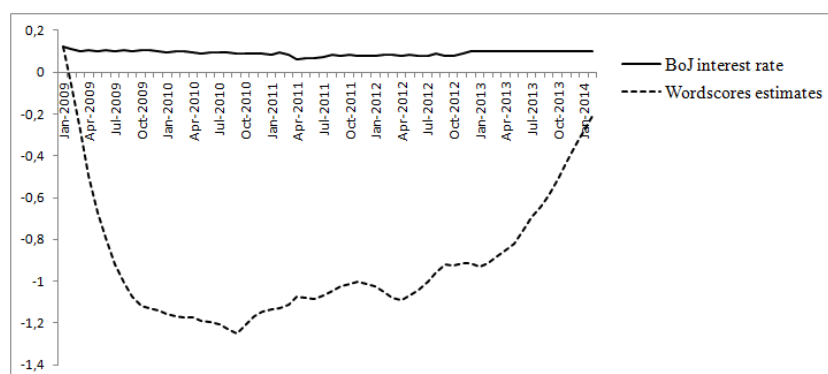Figure 3: BoE interest rate and cumulative Wordscores estimates

Figure 4: BoJ interest rate and cumulative Wordscores estimates

The results clearly show that all the central banks considered in this analysis (ECB, FED, BoE, BoJ) had a communication policy, and thus, a forward guidance with an accommodative stance from 2009 onwards. While the policy rates of these central banks was rarely moved throughout this period due to the ZLB, the estimated values of the Wordscores methodology for their respective statements are negative and had a decreasing trend until the beginning of 2013. This confirms the fact that central banks use forward guidance as a policy instrument to provide a temporal guidance of their accommodative monetary policies and their unconventional measures when they are confronted to the ZLB. This obviously corresponds to the "Odyssean forward guidance" described by Campbell et al. (2012).

Moreover, the change in the trend of the Wordscores values for the ECB, the Fed, the BoE and the BoJ from the beginning of 2013 provides additional relevance to this observation. At that time, Ben Bernanke, the previous FED chairman, stated that the U.S. Federal Reserve may be done with its monetary stimulus the next year, this may explain the increase of the Wordscores estimates for the Fed from that period. For the BoJ, this period also corresponds to the start of the "Abenomics" economic policy and to the lunch of the Quantitative and Qualitative Easing, which has not included an explicit forward guidance on the policy rate (Filardo and Hofmann, 2013). For the ECB and the BoE, this might be the future occurrence of an exit strategy that explain the less accommodative stance of their forward guidance from 2013[5].

Overall, the estimates of the Wordscores approach give a clear overview of the accommodative content of central banks' forward guidance from 2009, and provide the prospects of the exit strategy that most of the central banks start to consider through their statements. Although it is important to remind that the Wordscores approach is more likely to complement rather than to substitute itself to other predictive methods based on macroeconomic projections for instance, it still gives important insights about the prospects of central banks' moves of the policy rate.

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[5]A member of the Bank of England's Monetary Policy Committee (MPC), David Miles, on September 2012, said the bank rate will be raised before the Bank of England (BoE) begins selling government bonds.

Conclusion

Using the Wordscores methodology, this paper reveals the accommodative stance of central banks' forward guidance since the start of the global economic crisis, and their exposure to the ZLB. This approach also allow to unveil the exit strategy that central banks seems to consider in their communication policy since the beginning of 2013, as the negative value of the Wordscores estimates decreases from that time. The Wordscores methodology thus gives important insights about the usefulness of central banks' communication policy in time of economic troubles, and provides a valuable tool to assess the consistency of communication policies, as well as it provides a relatively easy-to-use forecasting tool.

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