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European Central Bank:  
An overview of the first decade**

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\* Views expressed are those of the authors and do not necessarily reflect official positions of De Nederlandsche Bank.

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*Abstract*

Since its inception, the European Central Bank (ECB) has regarded communication as an integral part of its monetary policy. This paper describes and evaluates ECB communications during the first decade of its operation. We conclude that, overall, ECB communication has contributed to the effectiveness of its monetary policy. Our review of the literature shows that ECB communications affect the level and volatility of financial prices—suggesting that private sector expectations reacted to ECB communication. In addition, there is evidence that communication has improved the predictability of interest rate decisions.

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## **1. Introduction**

Since its inception, the European Central Bank (ECB) has regarded communication as an integral part of its monetary policy. It has communicated frequently to the public on various issues, such as its objective, its policy decisions, and the economic outlook. In doing so, the ECB has used various communication channels. For instance, the ECB extensively uses press conferences to inform the public on its decisions almost on a real-time basis. In addition, the ECB employs other communication channels, like the Monthly Bulletin, its website, as well as speeches by and interviews with prominent ECB policymakers.

This emphasis on communication is not unique to the ECB. Over the past two decades, a true revolution in thinking and practice has occurred with respect to central bank openness. For a number of reasons—including the greater independence from the political process and the related increased need for accountability—central banks have shed their previous shrouds of mystery. Most importantly, communication has become important because it has the potential to affect private sector expectations. As such, it offers central banks an additional instrument to achieve their monetary policy objectives. By now, communication has developed into a key instrument in the toolbox of many central bankers (Blinder, Ehrmann, Fratzscher, De Haan and Jansen, 2008).

This chapter describes and evaluates ECB communications during the first decade of its operation in light of this revolution in thinking and practice. According to Cechetti and Schoenholz (2008), the first-decade record is filled with outside complaints about ECB communication with financial markets. However, as they rightly point out, much of this criticism underestimates the challenge of communicating with so many diverse constituencies. Indeed, our assessment of the ECB's communication policies is quite favourable. We conclude that, overall, ECB communication has contributed to the effectiveness of its monetary policy. Our review of the literature shows that ECB communications affect the level and volatility of financial prices—suggesting that private sector expectations reacted to ECB communication. In addition, there is evidence that—on balance—communication has improved the predictability of interest rate decisions. Although financial market impact and predictability are important, they are not sufficient

because communication should also contribute to anchoring market expectations in the long run. In this respect, the effectiveness of ECB communications seems less clear.

The chapter is structured as follows. Section 2 discusses why communication may offer important benefits to central banks. Next, section 3 reviews the various topics on which the ECB has communicated and its communication channels. Section 4 examines empirical evidence on the effects of ECB communications.

In this chapter, we also discuss two issues concerning ECB communication that have received limited attention in previous surveys on central bank communication. First, we discuss whether dispersion in ECB communication has increased uncertainty on upcoming interest rate decisions. Second, we review the effectiveness of efforts of ECB officials to affect the euro dollar exchange rate by so-called ‘oral interventions’.

## **2. Why does central bank communication matter for monetary policy?**

Central bank communication has two main objectives: first, it contributes to the accountability of the central bank and, second, it helps the central bank in managing expectations. In this chapter, we leave the first objective aside and focus upon the second objective of central bank communication (see De Haan et al., 2005 for a further discussion on the accountability of the ECB).

Why are expectations relevant? Nowadays, it is widely accepted that the central bank’s ability to affect the economy critically depends upon the degree to which it can influence market expectations regarding the *future path* of overnight interest rates. The reason is simple: few, if any, economic decisions hinge on the overnight bank rate, which is the only market interest rate that is effectively controlled by the central bank. Long-term interest rates, reflecting expected future short-term interest rates, affect saving and investment decisions by households and firms. Therefore, the public’s perception of future policy rates is critical for the effectiveness of monetary policy.

Still, from a theoretical point of view, it is not obvious that communication may help the central bank realizing its ultimate objective(s), like price stability and stable economic growth. For instance, communication has little value added if the central bank credibly commits to a policy rule. Assuming that the public has rational expectations, any systematic pattern in the way that policy is conducted should be correctly inferred from

the central bank's observed behaviour (Woodford, 2005). Thus, when it comes to predicting future interest rates, the public merely has to interpret (forecasts of) economic data in view of the central bank's policy rule; there is no role for central bank communication. Following Faust and Svensson's (2001, p. 373) definition of central bank transparency—i.e., how easily the public can deduce central-bank goals and intentions from 'observables'—one might say that a central bank can be fully transparent without any communication.

This example is highly stylised. Still, it points out three conditions under which central bank communication may matter: non-rational expectations, absence of commitment to unchanging policy rules, and asymmetric information.

First, the assumption that the public will understand monetary policy perfectly regardless of the efforts that are made to explain it may be unrealistic. Woodford (2005, p. 403) argues that: "Insofar as explanation of the policy rule to the public does no harm under the assumption of rational expectations, but improves outcomes under the (more realistic) assumption that a correct understanding of the central bank's policy commitments does not occur automatically, then it is clearly desirable for the central bank to explain the rule that it follows."

King (2005) goes even further and argues that the public may follow simple (but possibly fairly robust) 'heuristics' in making decisions instead of following optimising behaviour. He argues that in this case central bank communication can play an important role in leading people to choose heuristics of the right sort: "the more the central bank can do to behave in a way that makes it easy for the private sector to adopt a simple heuristic to guide expectations the better. A good heuristic from that point of view would be 'expect inflation to be equal to target'" (King, 2005, p. 12). In other words, by communicating to the public the central bank may help anchoring expectations.

Second, it is unlikely that the central bank would stick to an unchanged policy rule for long. For example, according to Bernanke (2004), "specifying a complete and explicit policy rule, from which the central bank would never deviate under any circumstances, is impractical. The problem is that the number of contingencies to which policy might respond is effectively infinite (and, indeed, many are unforeseeable)." Likewise, ECB President Trichet has repeatedly emphasized that the ECB takes its

decisions one step at a time, rather than following a rule. For instance, after the interest rate decision on 2 March 2006, Trichet said: “We do not engage a priori in a series of interest rate hikes...we do not pre-commit ourselves unconditionally.”<sup>2</sup>

Third, financial-market participants generally do not have as much information as monetary-policymakers on a number of key inputs to policymaking, including the weights policymakers assign to possible objectives, or their assessment of the economic situation. If there is *asymmetric information*, so that the public and the central bank dispose of different information, it may be perfectly rational for the public to adjust their expectations if the central bank provides new information. Here it is important that we distinguish between the types of information on which asymmetries may exist.

In the first place, the central bank may provide *information about its reaction function*. This should lead, *ceteris paribus*, to an increase in the private sector’s ability to forecast the central bank’s policy decisions. Suppose, the central bank follows a Taylor-type rule,

$$r_t = r^* + \pi_t + \alpha y_t + \beta(\pi_t - \pi^*) \quad (1)$$

where  $r$ ,  $r^*$ ,  $y$ ,  $\pi$  and  $\pi^*$  denote the interest rate, the equilibrium real interest rate, the output gap, inflation and target inflation, respectively. An improvement in the private sector’s understanding of what values the central bank uses for  $r^*$ ,  $\pi^*$ ,  $\alpha$  and  $\beta$  would lead to improved private sector forecasts for  $r_t$  (Swanson, 2006). One possibility in countries without explicit inflation targets is that the central bank may provide information about its long-run inflation target (Kohn and Sack, 2004). Likewise, central banks could also provide information on the relative weights that the central bank places on its output and inflation objectives. The parameter  $\alpha$  is an important determinant of the speed with which policy seeks to put inflation back on target following adverse shocks. The larger is  $\alpha$ , the larger is the ‘flexibility’ allowed in returning to the inflation target following a shock. Hence, it determines the period-by-period deviations of inflation from its target. Providing this kind of information may help the private sector to form more accurate expectations. According to Trichet (2005), “If the central bank is able to convince

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<sup>2</sup> <http://www.ecb.int/press/pressconf/2006/html/is060302.en.html>.

economic agents and markets participants of its analysis and assessment of the outlook, and about the policy measures that it is going to take in response to it, this mechanism of anticipation will act in self-equilibrating manner. As soon as the macroeconomic news is released, expectations of the short-term interest rates will adjust in the equilibrating direction that markets expect to see implemented by the central bank.”

Bernanke (2004) refers to the recent literature on adaptive learning in explaining why communication on these issues affects monetary policy effectiveness (see Blinder *et al.*, 2008 for a further discussion). When the public does not know but instead must estimate the central bank’s reaction function, there is no guarantee that the economy will converge to the optimal rational expectations equilibrium because the public’s learning process *itself* affects the behaviour of the economy. The feedback effect of learning on the economy can lead to unstable or indeterminate outcomes. In such a setting, communication by the central bank may play a key role in helping improve economic performance.

Furthermore, the central bank may have better information on the economic outlook.<sup>3</sup> Various studies find that financial markets not only react to macroeconomic news, but also to *information on the economic outlook* provided by the central bank. Apparently investors update their own views in response to the information conveyed by the central bank. Kohn and Sack (2004) argue that private agents may lend special credence to the economic pronouncements of the central bank, particularly if the central bank has established credibility as an effective forecaster of the economy. They point out that the Federal Reserve has been broadly correct on the direction of the economy and prices over the past two decades, on occasion spotting trends and developments before they were evident to market participants. This record has enhanced its reputation and credibility.<sup>4</sup>

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<sup>3</sup> Another difference may be the asymmetry in the treatment of macroeconomic information. Market participants have a monitoring horizon biased toward short-term movements of financial markets, while the central bank analyses every kind of economic development and their short to medium-term impact on inflation and economic activity. As a consequence, market participants have a limited ability to build proper data-driven economic scenarios consistent with the central bank’s view of future inflation. Communication may help them forming a better view.

<sup>4</sup> Romer and Romer (2000) provide statistical evidence that the Federal Reserve staff forecasts for output and inflation have been more accurate than private sector forecasts over the past several decades. Gamber and Smith (2009) find that the Fed’s forecast errors remain significantly smaller than the private sector’s but the gap has narrowed considerable since the mid-1980s, especially after 1994.



Even though there are good reasons why communication may be beneficial, it is by no means clear what constitutes an optimal communication strategy. The literature on central bank transparency has shown that full disclosure of all available information is often not optimal. Unfortunately, the theoretical literature has not come up with clear-cut conclusions regarding the optimal level of transparency (Geraats, 2002; Van der Cruijssen and Eijffinger, 2009), although progress is being made (Van der Cruijssen, Eijffinger and Hoogduin, 2008). In general, the central bank faces a trade-off when there are limits as to how much information can be digested effectively (Kahnemann, 2003). The trade-off might become even more pronounced if the central bank communicates about issues on which it receives noisy signals itself, such as the evolution of the economy (as opposed to, e.g., its intentions regarding upcoming interest rate decisions). This has been stressed by Amato, Morris and Shin (2002) who argue that central bank communication can coordinate the actions of financial market participants away from fundamentals, in the sense that they attach too much weight to the central bank's views, not taking into account that they reflect a noisy signal. However, Blinder *et al.* (2008) discuss some of the arguments casting doubts on the validity of this conclusion.<sup>5</sup>

Overall, the literature suggests that the benefits of communication are likely to outweigh potential drawbacks. We now turn to the empirical evidence regarding ECB communication.

### **3. ECB communication: topics and channels**

#### *3.1 Communication on objectives*

Independent central banks often benefit from a clearly defined mandate given by government. The Maastricht Treaty did not provide for a quantitative target for the ECB's main objective of price stability but the ECB defined price stability as 'inflation close to but below 2 percent in the medium run for the euro area as a whole'. Quantitative targets have two benefits. First, numerical targets facilitate accountability, enabling the performance of the central bank to be assessed against its mandated yardstick (De Haan

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<sup>5</sup> For instance, Svensson (2006) argues that the assumptions underlying the Morris and Shin result are not likely to hold in practice. See also Gosselin, Lotz and Wyplosz (2007).

and Eijffinger, 2000). Second, a quantitative objective (or objectives) helps to anchor the expectations of economic agents. Often, and through various channels, the ECB has informed the public on its definition of price stability.

### *3.2 Communication on decisions: the ECB press conferences*

Most central banks nowadays inform the public about their monetary policy decisions on the day they are taken. Many central banks do so by releasing short press statements. The ECB has been rather unique in detailing the motives behind a particular policy decision at elaborate press conferences after policy meetings. So far, it has refrained from releasing minutes. Press conferences may provide less detail than minutes, but they are timelier and more flexible, if they allow the media to ask questions.

Monetary policy meetings of the ECB Governing Council typically take place on the first Thursday of each month. Following these meetings, the ECB announces the monetary policy decisions at 13:45 CET. Some 45 minutes later, at around 14:30, the ECB President and Vice-President hold a press conference that comprises two elements: a prepared introductory statement containing the background considerations for the monetary policy decision, and a Questions & Answers (Q&A) part during which the President and the Vice-President are available to answer questions by the attending journalists. The introductory statement is understood to reflect the position and views of the Council, agreed upon on a word-by-word basis by its members. While providing background information on the rationale for its decision, the ECB press conference is generally less detailed than the minutes of the Bank of England or the Federal Reserve (Blinder *et al.*, 2008). In particular, it does not provide information on voting. However, the press conference avoids the substantial time delay of the minutes. Furthermore, the Q&A session allows the press to ask follow-up questions and thus can help clarify open issues (Ehrmann and Fratzscher, 2007a).

### *3.3 Communication through other channels*

A second important communication device for the ECB is its *Monthly Bulletin*, which is published one week after each monetary policy meeting and contains both the assessment of economic developments and information on its analytical framework—such as models,

methods, and indicators—used in the decision-making process. The editorial of the Bulletin contains a short explanation of the previous interest rate decision and frequently includes a summary statement of the Governing Council’s view of the economy.

The testimonies of the ECB President to the European Parliament (EP) offer a third opportunity to communicate. Four times a year, the President appears before the EP’s Committee on Economic and Monetary Affairs and explains the ECB’s policy decisions and its economic outlook. Subsequently, he answers questions posed by Committee members. These testimonies are open to the public and the transcripts of the presentations are published on the websites of both the EP and the ECB.

Finally, ECB officials often give speeches or interviews on monetary policy. Communications by individual central bankers offer greater flexibility in timing than pre-scheduled events. Speeches and interviews by individual committee members between meetings offer a way to communicate changes in views rapidly, if so desired (Blinder *et al.*, 2008). Furthermore, in the case of the ECB, national central banks feel they are responsible for explaining ECB policies to their respective national audiences. However, inter-meeting comments may be a potential source for confusion. For example, Ehrmann and Fratzscher (2007b) report that only 62.2 percent of communications on the monetary policy inclination by individual ECB central bankers were in line with the ECB policy decision taken at the Governing Council meeting following the communication.

Ehrmann and Fratzscher (2007c) have also analysed the timing of communication by individual ECB Governing Board members. Figure 1, which is reproduced from their study, shows that except for days surrounding the monetary policy meetings, there is a somewhat higher level of activity before than after meetings (which is statistically significant at the 5% level), stressing the attempt of the ECB to prepare markets for the upcoming meeting. Ehrmann and Fratzscher also find that when a policy surprise is large (i.e., when its absolute value is above the average absolute surprise) ECB officials are more talkative. Whereas the members of the Governing Council normally talk to the public roughly every 7 (business) days, they do so more than every 5 days if there has been a large surprise at the previous meeting.

[Insert Figure 1 here]

### 3.4 *Communication on future policy decisions*

When it comes to future policy decisions, many central banks provide some sort of forward guidance, albeit in very different ways. A few central banks (like those of New Zealand, Norway, and Sweden) even provide *quantitative* guidance by publishing the numerical path of future policy rates that underlies their macroeconomic forecasts.

The ECB has so far refrained from giving explicit information on future interest rate decisions. However, the use of key words and phrases to signal views on monetary policy has played an important role throughout the years. For example, euro area central bankers have used phrases such as ‘interest rates are appropriate’, which can readily be interpreted as a neutral comment on interest rates.

During some time, the term ‘vigilance’ and variations thereof played an important role in ECB communication. Jansen and De Haan (2007b) describe how this came about. Between June 2003 and December 2005, the ECB maintained its main refinancing rate at a level of 2%, but frequently voiced its concern about inflation. One worrisome development was that inflation expectations at the time sharply increased, which led the ECB to signal that it was ‘vigilant’ regarding upward risks to price stability. In 2006, ECB President Trichet (2006, p. 9) described this strategy as follows: “Importantly, signalling vigilance proved instrumental in reaching a common understanding with the markets: the ECB, though observationally inactive, was at any time ready to start action”. At another occasion, Trichet (2005) noted: “Over time, our communication became increasingly ‘alert’, signalling our vigilance to the upside risks to inflation which grew at the time.” According to ECB Board member Bini Smaghi (2005), “Vigilance can thus be communicated ... even if policy rates remain unchanged[.] ... If the communication strategy is successful, expectations converge over time back to the level of unchanged policy rates.”

To illustrate the role of ‘vigilance’, Figure 2 shows ten-year euro area break-even inflation (solid line) and the occurrence of ‘vigilance’ (the grey diamonds) between June 2003 and March 2007. The dotted line denotes the ECB’s main refinancing rate. Starting in March 2004, the term ‘vigilance’ is used on 114 trading days.

[Insert Figure 2 here]

After December 2005, the term ‘vigilance’ only occurs on 32 trading days. Figure 2 also shows how from that point onwards, the ECB tightened monetary policy in a number of consecutive steps. Interestingly, after 2005, the interpretation of ‘vigilance’ changed as market participants saw the phrase as an indicator of upcoming policy changes. For example, according to Bloomberg, “ECB President Jean-Claude Trichet has used the word ‘vigilant’ to flag each of the six rate increases since late 2005” (Bloomberg News, 15 February 2007). Likewise, according to UBS: “Trichet has made a practice of effectively pre-announcing hikes at the prior meeting with the use of the key ‘vigilant’ phrase” (UBS FX Trade and Research, 9 January 2007).

The use of ‘vigilance’ seems to have ended abruptly as the liquidity crisis started over the summer of 2007. At a press briefing on 2 August, Trichet noted “The existence of upside risks to price stability at medium to longer-term horizons is confirmed by the strength of the underlying rate of monetary expansion: *strong vigilance* is therefore of the essence to ensure that risks to price stability over the medium term do not materialise.”(italics added).<sup>6</sup> However, at the subsequent Governing Council meeting in September, interest rates were left unchanged, and there was no mentioning of ‘vigilance’. When asked about the absence of ‘strong vigilance’ during the Q&A session, Trichet replied: “...I would say that you have noted that I did not say the words ‘strong vigilance’, and I don’t want to comment any further on that. It is up to you, observers and the market to make your own judgement on the overall statement I have just given on behalf of the Governing Council.”<sup>7</sup> When the credit crisis further unfolded in 2008 and 2009, ‘vigilance’ did not reoccur in the ECB’s communications.

The use of code words may contribute to short-term predictability, but there may be drawbacks. Cecchetti and Schoenholz (2008, p. 12) are rather critical about the use of code words by the ECB: “Codes are imperfect signals at best, and typically relate only to near-term policy prospects, which may be of least importance in the formulation of critical long-run market expectations. Rather, these expectations depend sensitively on

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<sup>6</sup> Available at <http://www.ecb.int/press/pressconf/2007/html/is070802.en.html>.

<sup>7</sup> Available at <http://www.ecb.int/press/pressconf/2007/html/is070906.en.html>.

the transparency and reliability of the central bank's reaction function, along with an understanding of the evolution of prices and the economy.”

### *3.5 Communication on economic developments*

Central bankers often communicate their views on the current economic situation and likely future developments. This can be done qualitatively—for instance, by stating that economic growth will pick up—or by providing quantitative guidance. In December 2000, the ECB began publishing so-called ‘projections’ on a biannual basis. The projections, which are published in the June and December issues of the ECB Monthly Bulletin, consist of forecast ranges for inflation, GDP growth, and main expenditure components. The projections are prepared by experts from euro area national central banks and from the ECB, and serve as important input to the deliberations of the Governing Council (ECB, 2001). The ECB President makes the projections public at the press conference, following a Governing Council meeting. This could create some confusion, as the Governing Council does not necessarily endorse the projections. Each release of the projections is accompanied by a short note detailing the main assumptions underlying the forecasts, followed by a short description of the economic rationale behind the projection itself. Since 2004, the ECB also releases the ECB staff projections, which are constructed in the spring and fall of each year.

One economic variable that received a lot of attention during the early years of the EMU was the exchange rate. Before its introduction, the euro was widely expected to be a strong currency. Some even hoped (or feared) that the euro would compete with the dollar in its role of most important international currency (see De Haan and Eijffinger, 2000 for a discussion). As the new currency was an important symbol for the EMU, its decline against the dollar led some observers to question the overall success of the EMU. Moreover, the strong depreciation of the euro was a serious threat to price stability in the euro area. In the end, the ECB reacted by intervening in the foreign exchange market in 2000. Apart from interventions, the ECB has been very active to support the euro verbally (a strategy known as ‘talking up the currency’). ECB officials have often expressed the view that the euro was undervalued during the period under consideration.

Once the euro started to appreciate against the dollar, the exchange rate has figured less prominently in ECB communications.

Now that we have described the ECB communications, we will analyze to what extent these communications have contributed to the effectiveness of ECB monetary policy making.

#### **4. What has ECB communication contributed?**

##### *4.1 Effects of ECB communication on predictability of interest rate decisions*

One perceived benefit of central bank transparency is that it will contribute to predictability of monetary policy. Indeed, the empirical evidence points out that ECB monetary policy generally has been quite predictable. Also, predictability of ECB policy decisions has increased over time (see Blattner, Catenaro, Ehrmann, Strauch and Turunen, 2008, for an overview). For instance, Bernoth and Von Hagen (2004) find that the money markets were able to predict short-term rates well, suggesting that ECB communication has worked well during the first years of EMU. Also, Rosa and Verga (2007) conclude that the forecasting ability of communication by the ECB (measured on the basis of the introductory statements of the ECB President) is similar to the one implied by market-based measures of monetary policy expectations. Ehrmann and Fratzscher (2007b) also find that financial markets have been able to anticipate ECB decisions well. In fact—using changes in short term interest rates on meetings days as a measure of predictability—they find that the ECB has been as predictable as the Federal Reserve, and that both have been somewhat more predictable than the Bank of England.

It is less clear which pieces of communication contribute in particular to predictability. Several papers analyse whether communication adds information compared to the information contained by variables typically included in a Taylor-rule model. As we argued in section 2, this is one area where communication could make a difference.<sup>8</sup> Heinemann and Ullrich (2007) find that their communication index, based on

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<sup>8</sup> As Bernanke and Boivin (2003) point out, most empirical analyses of monetary policy have been confined to frameworks in which the central bank is implicitly assumed to exploit only a limited amount of

the wording of the introductory statements by the ECB President at the press conference following Governing Council meetings, adds information not provided by Taylor-rule variables. Also Rosa and Verga (2007) conclude that words and data on macroeconomic variables are essentially complements, rather than substitutes. However, Jansen and De Haan (2009) conclude that communication-based models do not outperform models based on macroeconomic data in predicting decisions, although they find that statements on the main refinancing rate and future inflation are significantly related to interest rate decisions.

#### *4.2 Dispersion in ECB communication*

Clear communication requires that the various communication tools send signals that are mutually consistent and well coordinated, and that different central bankers communicate in a consistent way. In the first part of this section we discuss recent research on the consistency among different ECB communication channels, while in the second part we discuss whether ECB officials communicated in a consistent way.

With a variety of communication tools available, coordination of the message across these tools is crucial. For example, if the ECB President identifies risks for price stability, while the published inflation projection indicates that inflation is expected to stay below the target, the public may become confused as to the course of future monetary policy. Bulíř, Čihák, and Šmídková (2008) analyze the various measures of forecast risk that the public can obtain from ECB communication. The basic idea is that it is much easier for the public to understand monetary policy if all communications send the same message, pointing to the same type of forecast risk. The authors compare the signals from various ECB communication tools, namely inflation forecasts, inflation targets, and verbal assessments of the inflation risks contained in the ECB's press releases, and monthly bulletins. Their main finding is that during 1999–2007, the ECB's communication was clear in about 95 percent of cases and that the clarity improved in

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information, like in the Taylor-rule model. In practice, the central banks' approach to data analysis typically mixes the use of large macro-econometric models, smaller statistical models, heuristic and judgmental analyses, and informal weighting of information from diverse sources. One way of interpreting central bank communication may be that it summarizes the central bank's assessment of all the information it employs. In that case, models using central bank communication should outperform those that rely only on a limited number of macro variables.



2003–2007 as compared to 1999–2002. This compares favourably with communication clarity in other central banks.

We will now discuss whether ECB officials communicated in a consistent way. Decision-making in the ECB Governing Council is often described as ‘collegial’ (see Blinder, 2007). Also the communication strategy of the ECB has been characterized as ‘collegial’; in comparison to the Federal Reserve, the communication of individual central bankers of the ECB is less diverse (Ehrmann and Fratzscher, 2007b). Still, at times, there has been quite some dispersion in ECB communication. A potential problem is that too many disparate voices might confuse rather than enlighten the public—especially if the messages appear to conflict. If done poorly, uncoordinated group communication might actually lower the signal-to-noise ratio.

To examine this hypothesis, we analyze the effects of dispersed communication during the initial years of the EMU.<sup>9</sup> We performed a content analysis of comments by leading euro area central bankers on the main refinancing rate, the outlook for euro area inflation, and the outlook for euro area economic growth. Per topic, we classified each comment on a ternary scale (-1, 0, +1). For example, statements suggesting a tightening of monetary policy are coded +1, whereas statements hinting at interest rate cuts are coded -1. We measure dispersion in communication by computing the standard deviation of the coded statements. As shown in Figure 3, notably ECB statements on the outlook for inflation and economic growth were dispersed, with the degree increasing over time.

[Insert Figure 3 here]

We evaluate the effects of dispersion on predictability by using survey data on interest rate expectations.<sup>10</sup> Following the approach by Ehrmann and Fratzscher (2005), Table 1 shows tobit estimation results where the dependent variable is either the absolute prediction error (column 1), the fraction of incorrect predictions (column 2) or the

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<sup>9</sup> The sample period is 6 May 1999 to 2 May 2002. This period is interesting as both the ECB and financial markets had to learn how to deal with communication by a newly created international organisation. Further details are given in Jansen and De Haan (2006).

<sup>10</sup> These expectations are taken from the Reuters poll of forecasters. Before each ECB interest rate decision, Reuters polls key economists on their views on the main refinancing rate after the upcoming meeting. The use of these data instead of market-based expectations allows us to examine the impact of communication dispersion on market uncertainty as reflected in the dispersion of the views of the forecasters.

standard deviation of expected interest rates (column 3). We control for the fact that communication is not the only factor that influences predictability by using the standard deviation of a daily series of one-month Euribor rates in the week before the one in which the interest rate decision is made to control for macroeconomic uncertainty.<sup>11</sup>

[Insert Table 1 here]

We find that dispersion on the inflation outlook negatively influences predictability as measured by the absolute prediction error. Inconsistencies in statements on the main refinancing rate and the outlook for economic growth are not related to the absolute prediction error (column 1). We also find a positive relationship between dispersion in comments on inflation and the degree of incorrect interest rate predictions (column 2). The marginal effect in this case is equal to 0.21 ( $p = 0.03$ ), which implies a sizeable effect of dispersion on predictability. Finally, there is a strong indication that dispersion leads to higher levels of uncertainty as the coefficient for the variable measuring dispersion in inflation comments is highly significant (column 3). The marginal effect in this case is equal to 0.07 ( $p = 0.00$ ).

These regressions show that diverging views increase uncertainty about upcoming decisions, and that agents make less accurate predictions. Using different data, Ehrmann and Fratzscher (2005; 2007b) draw similar conclusions for the ECB. Overall, the policy implication is that, from the perspective of predictability, central bankers should take care that their statements are consistent.

#### *4.3 Effects of ECB communication on level and volatility of financial prices*

An important line of research focuses on the impact of central bank communications on financial markets. The basic idea is that if communications steer expectations, asset prices should react. There is a broad consensus that ECB communication affects financial markets. First, there is substantive evidence that various forms of ECB communication affect volatility, which implies that expectations changed (De Haan, 2008). This holds

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<sup>11</sup> We also estimated specifications with a linear trend as, over the years, the ECB may have become more predictable. This did not affect the results.

true for short-term interest rates (Sebestyén and Sicilia, 2005), the bond market (Andersson *et al.*, 2006), the stock market (Andersson, 2007), and the swap markets (Coffinet and Gouteron, 2007). The strongest effects are generally found for the introductory statements at the ECB press conference following the Governing Council's meeting (Connolly and Kohler, 2004 and Sebestyén and Sicilia, 2005). Ehrmann and Fratzscher (2007a) analyse whether the press conferences provide *additional* information, beyond that explaining a given decision. If a policy decision contains all relevant information for market participants, markets should not show any systematic movement during press conferences. The separation of the release of the decision from its explanation allows separating the effect of monetary policy decisions from the accompanying communication. These authors find that the size of the market reaction to press conference is, on average, substantially larger than the reaction to the policy decision itself, while the press conference at the same time exerts lower effects on market volatility. The market reaction to the press conference is related to the characteristics of the decision: the more a decision surprised the market, the stronger is the reaction to the introductory statement. Especially statements containing a reference to inflationary developments and responses to questions regarding interest rate discussions at the Governing Council meeting have substantial effects on markets.

While studies focusing on volatility can only establish whether or not markets react (Blinder *et al.*, 2008), studies that have coded ECB communication yield evidence that financial markets also moved in the intended direction.<sup>12</sup> For instance, Ehrmann and Fratzscher (2007b) find that statements suggesting tighter monetary policy lead to higher rates, while statements suggesting easing lead to lower rates. Statements on monetary policy inclinations move interest rates by 1.5-2.5 basis points. Musard-Gies (2006) finds similar results, although the short end of the yield curve reacts more sharply to statements than the long end. Using tick-by-tick data on Euribor futures, Rosa and Verga (2008)

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<sup>12</sup> In this line of research, communication is quantified in order to assess both the direction and magnitude of its effects on asset prices. Communications must be classified according to their content and/or likely intention, and then coded on a numerical scale. Negative (positive) values are assigned to communications that are perceived as dovish (hawkish), and zero to those that appear to be neutral. Whereas some researchers restrict the coding to directional indications by using a scale between -1 and +1 (e.g., Jansen and De Haan, 2005, Ehrmann and Fratzscher, 2007b), others assign a finer grid that is at least suggestive of magnitude (Berger *et al.*, 2006, Rosa and Verga, 2007, Rosa and Verga, 2008, Heinemann and Ullrich, 2007, and Musard-Gies, 2006), e.g. by coding statements on a scale from -2 to +2.

show that the unexpected component of ECB comments has a sizable impact on futures prices. More importantly, they analyze whether ECB comments moved markets in the intended direction. Table 2, which is based on their study, shows how the response of financial markets seems to be in accord with the tone of ECB communication: hawkish statements lead to higher futures rates, while dovish statements lead to the opposite reaction. Interestingly, ECB communications apparently have long-term implications, in particular if the comments are dovish.

[Insert Table 2 here]

#### *4.4 Effects of ECB communications on inflation expectations*

Predictability and market impact are necessary, but not sufficient conditions for successful and effective communication. In addition, communication policy should also aim at anchoring and guiding market expectations over the medium to long run (Issing, 2005). As the main objective of the ECB is price stability, an important issue is to what extent communication can help anchoring inflation expectations.

Only four studies that we are aware of have examined the impact of the ECB's communication on inflation expectations. Ehrmann and Fratzscher (2007b, 2007c) examine the impact of communication on five-year inflation expectations derived from indexed bonds and find that their measures of communication are not significantly related to inflation expectations. Jansen and De Haan (2007b) find evidence that communication by the ECB regarding risks to price stability (measured by the frequency and strength of the key word 'vigilance') between June 2003 and December 2005—a period during which the ECB did not change its policy rates—reduced high-frequency inflationary expectations slightly in the second half of 2005, when a change in the ECB's policy stance became increasingly likely. To some extent, their results lend support to Trichet's (2005) claim that communication has helped stabilize inflation expectations without a policy change. However, the reported impact is quite small so that it is clear that other factors also played a crucial role in stabilizing these expectations. Furthermore, the impact is only significant for the period when an interest rate hike became more likely. In

other words, communication apparently works best when supported by (a credible likelihood of) deeds.

Finally, Ullrich (2008) examines whether the updated Heinemann-Ulrich ECB communication indicator is related to expected inflation. To proxy expectations, she uses data from the ZEW Financial Markets Test in which qualitative answers of experts from banks, insurance, investment, and industrial companies with regard to the development of inflation in the following 6 months are transformed into quantitative inflation expectations. Her results suggest that when the ECB communicates concern about inflation risks, this induces financial market experts to adjust inflation expectations with a 6-month horizon upwards. Our reading of this result, however, is that communication does not have the desired impact. If the ECB were credible, financial markers would believe that ECB policies would ensure that inflation does not deviate too much from target.

#### *4.5 Effects of ECB communication on exchange rates*

A recent strand in the literature studies the effects of central bank communication on the exchange rate. Various studies have focused on the effects of comments regarding monetary policy and the economic outlook. Conrad and Lamla (2007) investigate the impact of the ECB's policy announcements on the euro-dollar exchange rate. They find that surprise interest rate changes explain exchange rate movements immediately after the press release, and that, during the introductory statement, communication with respect to future price developments is most relevant. However, Ehrmann and Fratzscher (2007b) find no evidence that ECB communication has affected the exchange rate, although they do find that ECB comments have affected interest rates and equity markets.

One difference between these two studies is that the latter uses daily data. The daily frequency may be too low to pick up any effects of communication. This suggestion is also present in studies that focus on the effects of comments regarding the exchange rate. The central question in those papers is to what extent different communication strategies influence the level or volatility of the exchange rate. These strategies include intervention "threats" (suggestions or rejections of actual interventions in currency markets), "verbal" or "oral" intervention (comments on the currency intended to create

positive or negative momentum) or a combination of words and actions (actual interventions closely followed by comments).

During the early years of the EMU, the ECB made frequent use of oral interventions to support the euro. At the time, central bankers were particularly worried about the potential pass-through effects of the decline in the euro-dollar exchange rate. This prompted them to make numerous comments in an apparent attempt to create positive momentum for the new currency. Jansen and De Haan (2005) have analyzed oral interventions by the ECB in their study on the period of prolonged depreciation of the euro against the dollar between 1999 and 2002. Using daily data, these authors find that the euro-dollar exchange rate did not react to ECB oral interventions. For the same sample period, but now using intraday-data, Jansen and De Haan (2007a) find that there were effects of oral interventions, but these effects were small and short-lived. In contrast, Fratzscher (2006) finds strong evidence that ECB communications affected the euro-dollar exchange rate. His analysis focuses on a longer period, however, and includes also oral interventions by the Bundesbank. Still, he finds that exchange rate comments have affected spot as well as forward exchange rates with an estimated impact on the conditional mean of up to 0.21 percent.

## **5. Concluding comments, future research, and policy recommendations**

A substantial body of research has examined the effects of communications by the European Central Bank. On the basis of our review of empirical studies, we conclude that, on balance, ECB communication has contributed to the effectiveness of ECB monetary policy. The literature finds that communication has influenced developments in financial markets, suggesting that the ECB has succeeded in affecting private sector expectations. In addition, there is evidence that communication has improved predictability of interest rate decisions. Still, predictability and market impact are important, but not sufficient, as communication should also aim at anchoring long run inflation expectations. In this area, the effects of ECB communication turn out to be less clear, and this remains an important point of attention.

In some respects, ECB communications seem less successful. First, the dispersion in ECB communication has increased uncertainty on upcoming interest rate decisions

during the initial years of the EMU. The policy implication is that central bankers, from the perspective of predictability, should take care that their statements are consistent. Second, there is only mixed evidence that the ECB's efforts to talk up the euro have had lasting effects on the euro-dollar exchange rate.

As to future research, in our view there are some important issues to be put high on the agenda. First, Blinder *et al.* (2008, p. 941) point out, "virtually all the research to date has focused on central bank communication with the financial markets. It may be time to pay some attention to communication with the general public." According to Cecchetti and Schoenholz (2008), public support of the ECB is critical to ensuring the independence of the ECB over the long term. Although the Maastricht Treaty provides the ECB with a very strong foundation, the ECB lacks the natural constituency that the most credible national central banks typically enjoy (like the Bundesbank in the past), especially when confronted by politicians with a shorter horizon. The ECB's efforts to communicate also to the public at large may help to build that popular support, but this process may take many years.

Second, the role of intermediaries needs to be examined. Until now, studies have paid little attention to the specific way in which communication reaches market participants. Most studies have assumed that the media do not play an independent role in interpreting and transmitting central bank comments. Berger, Ehrmann and Fratzscher (2006) are among the few who explicitly study the media channel. They find that euro area financial markets have yet to converge on a homogeneous view of the ECB, to overcome locational and national biases, and to adopt a common expectation-formation process. They suggest that there is a scope for the ECB to guide this convergence process by a careful and targeted communication policy.

Also some other improvements in ECB communication have been suggested. For instance, Cecchetti and Schoenholz (2008) argue that the ECB's tendency to describe its decisions as unanimous may understate the nature and vigour of important Governing Council debates, thereby diminishing the ability of observers to make an informed judgment about policy and sustaining scepticism about ECB communications more generally. However, the drawback may be that dispersed views hamper predictability of interest rate decisions, as shown by our empirical analysis.

Finally, an enlargement of the euro area will be particularly challenging for ECB communication. Even today, no other central bank faces the task of communicating with the general public in so many different countries. On the one hand, the task of explaining ECB policy to this diverse audience will be helped by the presence of governors of national central banks. At the same time, the diversity may create new challenges. As Cecchetti and Schoenholz (2008) point out, speaking to local governments or populations is fundamentally different than communicating with financial markets. Diverse national histories may prompt different constituencies to view identical policy statements in very different ways. If the ECB wants to secure a popular base, then enlargement only intensifies that challenge.



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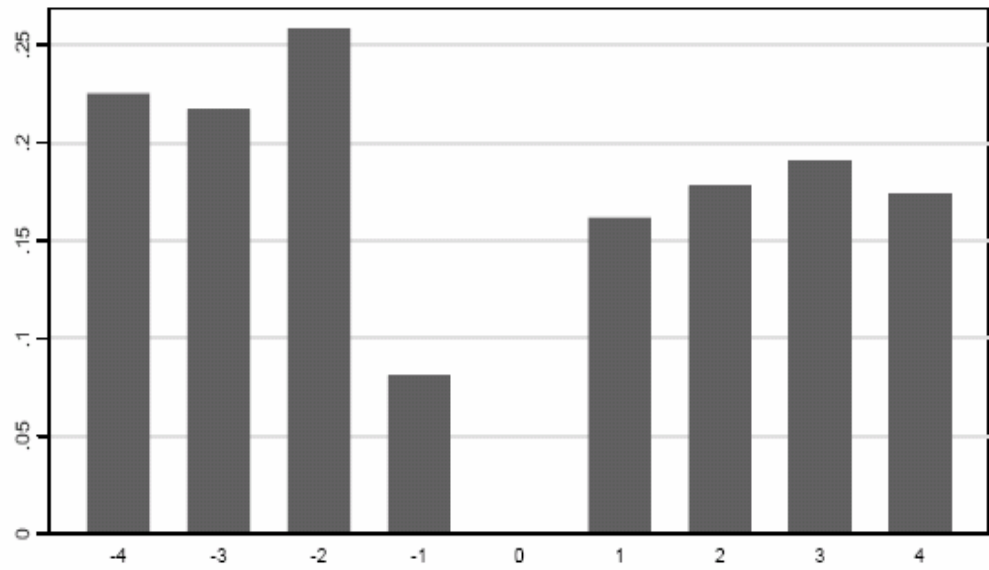
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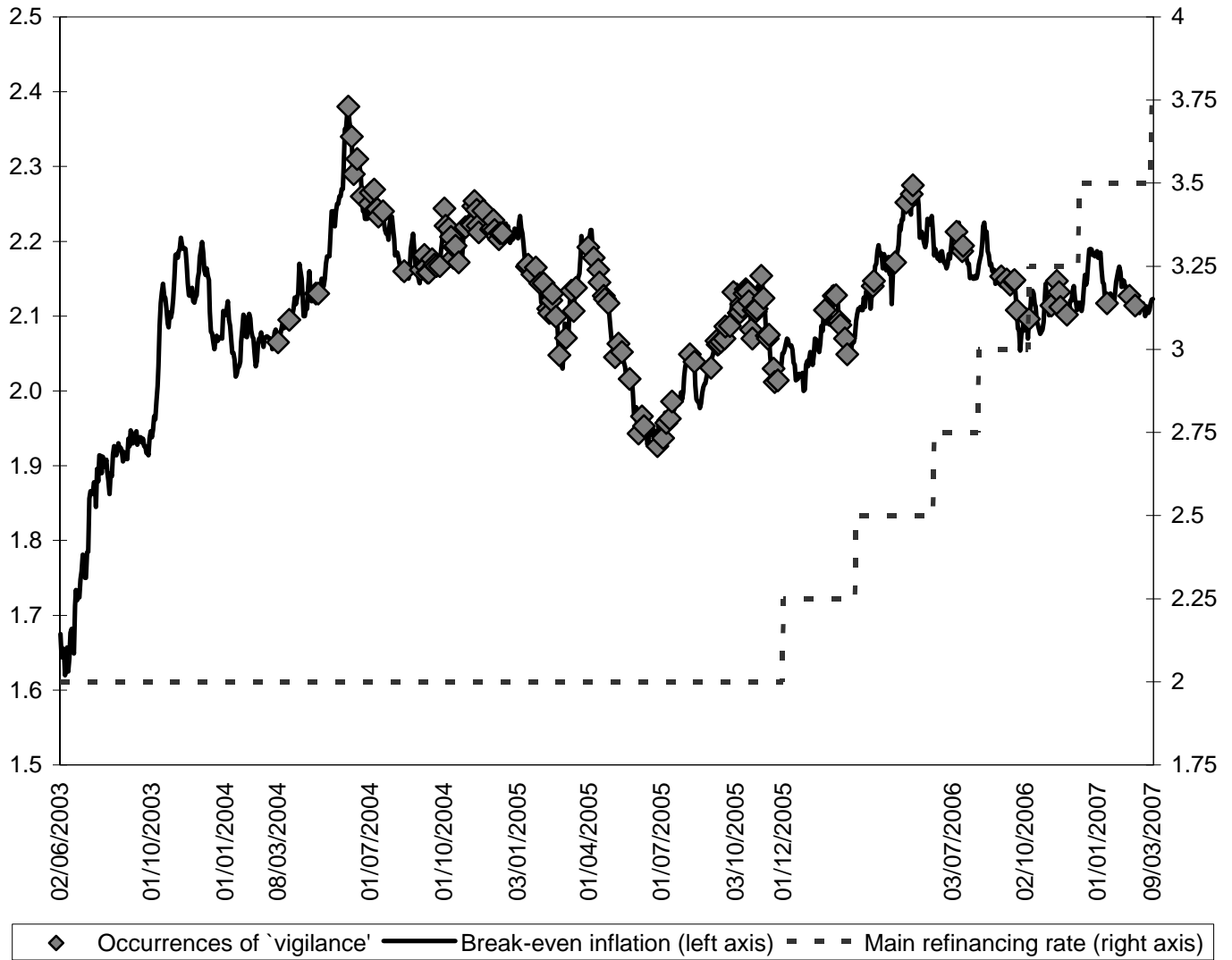
**Figure 1. The timing of ECB communication**



Notes: The vertical axis indicates the fraction of days in which communication takes place. The bars aggregate data from two days (i.e., bar “-1” contains days 2 and 1 before a meeting of the decision-making body). The first and last bars additionally contain 22 observations on days beyond  $\pm 8$

Source: Ehrmann and Fraztscher (2007c)

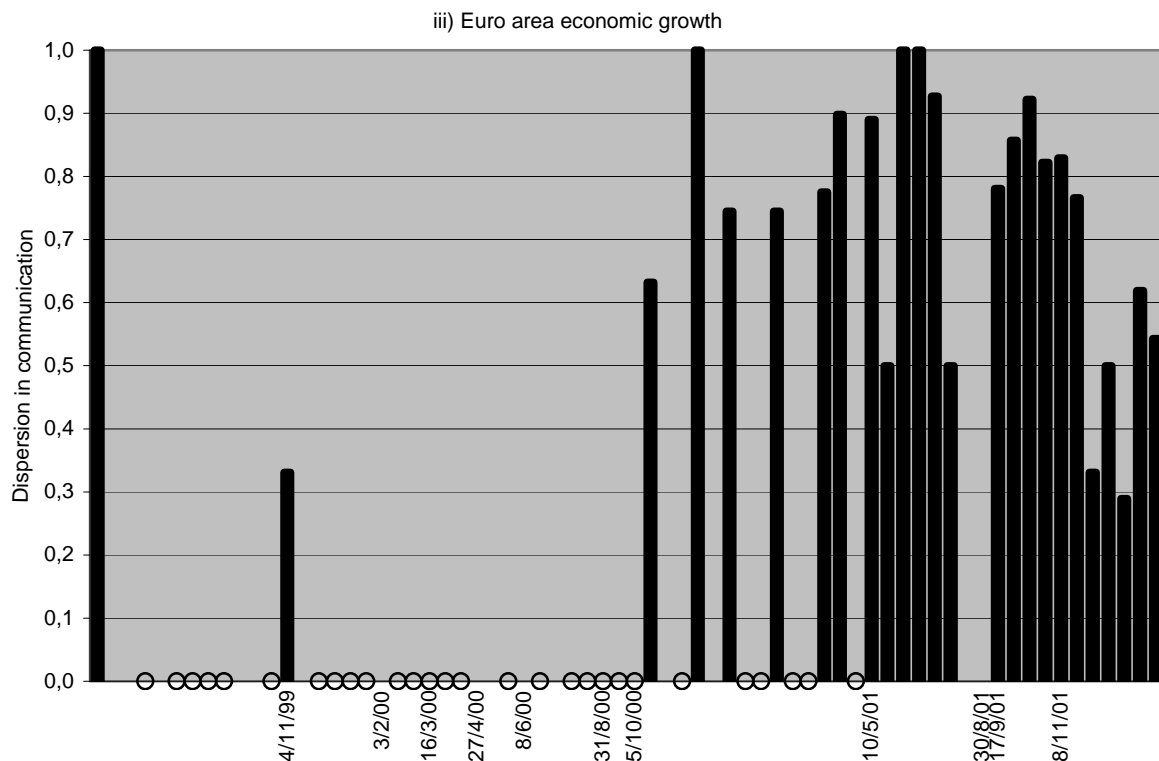
Figure 2. 'Vigilance' in ECB communication between 2003 and 2007



Note: The solid line shows euro area break-even inflation between June 2003 and March 2007. The grey diamonds indicate that on a particular day 'vigilance' was used in ECB communications. The dotted line denotes the ECB main refinancing rate. Dates are denoted in DD/MM/YYYY. Source: Jansen and De Haan (2007).







Note: The figures show the degree of dispersion in comments on i) the ECB main refinancing rate, ii) euro area inflation and iii) euro area economic growth. Dispersion is measured as the standard deviation of the coded statements. The sample period is 6 May 1999 to 2 May 2002. The dates correspond to the occurrence of ECB interest rate changes (DD/MM/YY). The circles on the x-axis indicate that there was more than one comment on a specific topic during the event window, but no inconsistency between the comments. Source: Jansen and De Haan (2006).

**Table 1. Dispersion made interest rate decisions less predictable**

	<i>Dependent variable:</i>		
	(1)	(2)	(3)
	<i>Absolute prediction error (median)</i>	<i>Fraction of incorrect predictions</i>	<i>Standard deviation of expected rates</i>
Dispersion in comments on:			
<i>Main refinancing rate</i>	0.06 (0.29)	-0.01 (0.25)	0.02 (0.04)
<i>Euro area inflation</i>	0.44* (0.22)	0.41** (0.20)	0.11*** (0.03)
<i>Euro area economic growth</i>	0.07 (0.18)	0.17 (0.15)	0.03 (0.03)
Standard deviation 1-month Euribor	3.88** (1.84)	4.50** (1.79)	0.88*** (0.31)
Constant	-0.67** (0.17)	-0.28** (0.13)	-0.04** (0.02)
Chi <sup>2</sup> LR-test	6.1	12.2**	19.4***
Number of observations	65	65	65
Percentage of censored observations	70.5	43.1	41.5

Notes: Standard errors in parenthesis. \*/\*\*/\*\* denotes significance at the 10/5/1% level.

The sample period is 6 May 1999 to 2 May 2002. All results use robust Huber-White standard-errors.

**Table 2. Does ECB communication have the intended effects?**

	<b>Hawkish statements</b>	<b>Dovish statements</b>
<i>Effects on futures rates after:</i>		
1 day	0.022**	-0.014*
2 days	0.022*	-0.017
3 days	0.019*	-0.023*
5 days	0.016	-0.022
10 days	0.041*	-0.067***
15 days	-0.013	-0.098***

Source: Rosa and Verga (2008), Table 8. The numbers in the table are changes in futures rates over various event windows following ECB meetings. \*\*\*/\*\*/\* denotes significance at the 10/5/1 % level.

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