

ARTICLES

THE PREDICTABILITY OF THE ECB'S MONETARY POLICY



Current best practice in central banking views a high level of monetary policy predictability as desirable. A clear distinction, however, is made between short-term and longer-term predictability. While short-term predictability can be narrowly defined as the ability of the public to anticipate monetary policy decisions correctly over short horizons, the broader and more meaningful concept of longer-term predictability would encompass the ability to understand the monetary policy framework of a central bank, i.e. its objectives and systematic behaviour in reacting to different circumstances and contingencies. In this broader sense, longer-term predictability is also closely related to the credibility of the central bank. This article reviews the main conceptual issues relating to predictability, in both its short and longer-term dimensions, and discusses how a transparent monetary policy strategy and constant communication have allowed the ECB to achieve a high level of overall predictability. Moreover, it presents descriptive evidence indicating that financial markets have been able to anticipate the ECB's monetary policy decisions with a degree of precision similar to that with which they anticipate the decisions of other large central banks. The ECB remains committed to fostering a genuine understanding of its monetary policy among the public and in financial markets, thereby contributing further to its already high level of predictability.

I INTRODUCTION

Current best practice in monetary policy-making, as embodied in the monetary policy framework of the ECB, emphasises the desirability of a high level of predictability in central bank decisions. A distinction can be made between the notions of short-term and longer-term predictability. Short-term predictability is achieved when the public is in a position to anticipate correctly the central bank's next monetary policy decisions.¹ A more fundamental aspect of monetary policy predictability relates to its longer-term dimension, which requires that the public has a genuine understanding of the central bank's monetary policy framework and its behaviour over time. A high degree of predictability of interest rate decisions is the result of monetary policy being conducted in a credible and transparent manner that is well explained to the public. Hence, while predictability broadly understood is not an objective per se, it enhances the effectiveness of monetary policy and contributes to accountability vis-à-vis the public at large.

This article reviews the main conceptual and empirical issues related to predictability and illustrates how the ECB's monetary policy framework contributes to enhancing both the

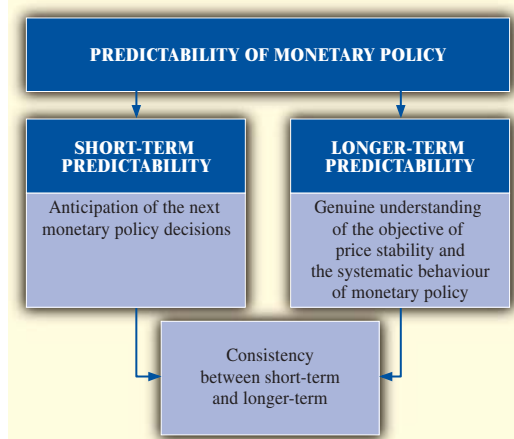
short and longer-term predictability of the single monetary policy. Section 2 sets out a general discussion of predictability and its role in practical monetary policy-making. Section 3 presents the ECB's approach to enhancing the predictability of its monetary policy, while Section 4 provides empirical evidence focused on the short-term predictability of the ECB relative to that of other major central banks. Section 5 offers some concluding remarks.

2 PREDICTABILITY AND THE CONDUCT OF MONETARY POLICY

The predictability of monetary policy is often understood in its narrower definition as the ability of financial markets to correctly anticipate the next monetary policy decisions of a central bank. Predictability of central bank decisions should not be restricted to this short-term notion, however, as it does not adequately reflect the appropriateness of monetary policy decisions as regards the achievement of the objective of price stability. A more meaningful definition therefore relates to a longer-term dimension and centres on the central bank's close adherence to its institutional objectives

¹ See the article entitled "Transparency in the monetary policy of the ECB" in the November 2002 issue of the Monthly Bulletin.

Chart 1 Predictability of monetary policy



as well as its consistent and transparent use of the instruments available to achieve these objectives. A central bank is predictable in the longer term if its objectives are transparent and credible, and if these are consistently pursued in monetary policy decisions. This in turn will normally result in a genuine understanding on the part of the public of the behaviour of the central bank and, in particular, its systematic reactions to different circumstances and contingencies (see Chart 1).

Against this background, short-term predictability should not be taken mechanically as an indicator of monetary policy transparency. Rather, a high level of short-term predictability should be seen as the natural outcome of a central bank's consistent pursuit of its monetary policy strategy combined with communication that explains its objectives and economic assessment. As such, the short-term predictability of interest rate decisions is an observable reflection of the public's overall understanding of a central bank's monetary policy framework.

Longer-term predictability enhances the effectiveness of monetary policy mainly through its contribution to the formation of expectations on the likely future path of the economy. This expectation formation process is a crucial element in the transmission of monetary policy. In a market-based economy, the central bank can

directly influence only short-term interest rates. However, consumption and investment decisions, and therefore also medium-term price developments, are to a large extent influenced by longer-term interest rates, which in turn depend on private expectations regarding future central bank decisions and inflation. As a result, it is important that the private sector is in a position to anticipate correctly the broad direction of monetary policy over the medium term.

Predictability reduces uncertainty about interest rates and thereby facilitates the pricing of assets and lowers risk premia, which in turn contributes to the efficiency of market allocation. It therefore allows firms to better manage their balance sheets, reduces their vulnerability to economic shocks and lowers risk management costs, thus creating the right conditions for investment decisions.

In addition, understanding of the monetary policy strategy among the public helps to guide price and wage-setting behaviour in a fashion that is consistent with the objectives of the central bank. This can only be achieved through consistent and credible implementation of the central bank's monetary policy strategy. In a setting where the private sector has no clear understanding of the central bank's reaction to economic developments, a perceived lack of commitment to maintaining price stability over the medium term may result in poor predictability and in inflation expectations hence not being anchored in a manner that is consistent with the central bank's objectives. Short-term changes in inflation and output might then become more protracted via wage and price-setting behaviour, possibly resulting in unwarranted economic fluctuations and welfare losses.

While a deeper understanding of the systematic behaviour of monetary policy will normally result in a high level of short-term predictability, perfect short-term predictability may not be attainable for a monetary policy geared towards the attainment of price stability over the medium term. First, perfect short-term predictability

could be trivially achieved if the central bank always mechanically executed the market's expectations, but this approach would not be appropriate. Since financial market expectations of future short-term interest rates largely reflect current market views about the forthcoming policy decision, a mechanical execution of market expectations by the central bank would result in these expectations becoming self-fulfilling even though they do not necessarily reflect an adequate monetary policy stance to maintain price stability. By contrast, a central bank following a price stability-oriented monetary policy is able to underpin interest rate expectations by frequently providing an independent and comprehensive assessment of the current and prospective economic and monetary situation. Second, a central bank may achieve perfect predictability by systematically pre-announcing changes in interest rates and then implementing them under any contingency. However, an unconditional commitment by the central bank regarding the future path of policy rates would restrict the flexibility of its monetary policy framework by limiting its ability to react swiftly to rapid changes in the economic situation. The need to react quickly, on occasion, may also limit the opportunity to fully prepare markets prior to a monetary policy decision. As a result, while central banks have no intention to surprise markets, any indications about the monetary policy stance must be seen as conditional on new information relevant for assessing the risks to price stability.

A coherent track record of reliable policy-making is clearly indispensable for ensuring that the public understands the behaviour of the central bank. However, it is useful to note that this goal cannot be achieved by mechanically implementing a simple policy rule linking monetary policy rates to a small set of indicators in a perfectly predictable manner.² Changes in key variables affecting the monetary policy stance are often subject to substantial revisions and to uncertain structural relationships. Moreover, a monetary policy guided by a small set of indicators would not necessarily guarantee the attainment of the price stability objective.

When reacting to risks to price stability and shocks, a central bank has to weigh up a number of factors, such as the nature and type of the shock, the current business cycle position, accumulated imbalances in the economy, the stability of the financial system and asset price developments.

Finally, communication plays a key role in enhancing predictability by allowing the public to understand monetary policy decisions. Given that monetary policy decisions are necessarily based on judgement and cannot be taken mechanically, there are limits to the extent to which these may be self-explanatory to the public. Therefore, a central bank has to be open and transparent in communicating its policy objectives and the underlying rationale of its decisions. It should not provide unconditional predictions of policy rates in the medium to long term, but allow the public to understand how monetary policy reacts systematically to different economic and monetary conditions and forthcoming developments. The combination of transparent objectives and consistent decision-making credibly explained through convincing communication to the public thus establishes a sound track record that forms the basis for a high level of monetary policy predictability.

3 THE ECB'S MONETARY POLICY FRAMEWORK AND PREDICTABILITY

Each central bank has to find its own approach to matching "words and deeds" so as to enhance the predictability of its monetary policy. The approach chosen is inextricably linked to the history of the central bank and to the surrounding economic and institutional environment. Although in 1999 the ECB, as a newly created central bank, was able to build upon the experience of the NCBs in the Eurosystem, it did not have its own track record of consistent monetary policy. At the same time, the ECB was faced with a high degree of

² For a detailed discussion, see the article entitled "Issues related to monetary policy rules" in the October 2001 issue of the Monthly Bulletin.

uncertainty stemming from data, structural parameters and the need to identify the appropriate economic model for analysing the euro area economy. These conditions constituted a considerable challenge to the task of conducting predictable monetary policy.

From the outset, the ECB gave high priority to establishing a monetary policy strategy that could underpin a credible and predictable policy course.³ First, when announcing its strategy in late 1998 the ECB's Governing Council quantified the objective of price stability in line with its mandate. This quantified objective provides a benchmark for the ECB's monetary policy, increasing its public accountability and providing a focal point for long-term inflation expectations.⁴ While the empirical measurement of such expectations has to be carried out with some caution, existing measures derived from index-linked bonds and surveys suggest that the ECB has been successful in anchoring inflation expectations in the euro area.⁵

Second, the ECB has maintained a medium-term orientation in its monetary policy strategy. While a central bank sets its monetary policy in response to shocks hitting the economy and the existing structures and expectations, it also needs to take account of the fact that financial markets and the public at large try for their part to understand the general pattern of monetary policy when forming their expectations. Such a pattern may be easier to detect if the central bank operates in a rather gradualist manner and does not aim to fine-tune economic developments, in particular given the problems of measuring the state of the economy and the long and variable time lags.⁶ The medium-term orientation of the policy course pursued by the ECB helps the public to understand the reaction of the central bank to the course of broad economic trends, thereby contributing to lower overall volatility and avoiding the disturbances caused by an erratic interest rate-setting policy.

The ECB has also been proactive in being transparent and continuously communicating with the public. In this context, transparency can be defined as an environment in which the

central bank provides in an open, clear and timely manner all relevant information on its mandate, strategy, assessments and policy decisions to the general public and the markets.⁷ The ECB sees transparency not only as an obligation to ensure democratic accountability, but also as an opportunity to communicate information facilitating the processes of learning and expectation formation in the private sector.⁸ In particular, its systematic approach to monetary policy has been further clarified in a number of speeches, studies and Monthly Bulletin articles. At the same time it should be noted that the quest for transparency and predictability implies that information made available to the public should be well structured and organised. If it is not, it could be confusing and counterproductive to the process of efficient expectation formation.

The collegial manner of decision-making in the Governing Council is reflected in the introductory statement given at the press conferences held on Governing Council meeting days, at which monetary policy decisions are explained to the public almost in real time. Moreover, empirical research supports the view that the Eurosystem's communication about the economic situation and monetary policy stance has also been generally homogeneous.⁹

3 See ECB (2004): *The Monetary Policy of the ECB*.

4 See Levin, A. T., F. M. Natalucci and J. M. Piger (2004), "Explicit inflation objectives and macroeconomic outcomes", ECB Working Paper No 383.

5 See in particular the intervention by Jean-Claude Trichet, President of the ECB, entitled "Monetary policy and 'credible alertness'", at the panel discussion at the Jackson Hole Conference on 27 August 2005.

6 See Issing, O. et al. (2003), *Background studies for the ECB's evaluation of its monetary policy strategy*, ECB.

7 See the article entitled "Transparency in the monetary policy of the ECB" in the November 2002 issue of the Monthly Bulletin. See also Issing, O. (2005), "Communication, transparency, accountability: monetary policy in the twenty-first century", *Federal Reserve Bank of St. Louis Review* 87 (2, Part 1), pp. 65-83.

8 See the article entitled "The external communication of the European Central Bank" in the February 2001 issue of the Monthly Bulletin.

9 See Ehrmann, M. and M. Fratzscher (2005), "Communication and decision-making by central bank committees: different strategies, same effectiveness?", ECB Working Paper No 488.

4 THE PREDICTABILITY OF THE ECB'S MONETARY POLICY: EMPIRICAL EVIDENCE

Despite the relatively short history of the euro area, a number of empirical studies have assessed the predictability of the ECB's monetary policy. Mainly for reasons related to measurability and the feasibility of empirical analyses, most of these studies have focused on the narrower notion of short-term predictability. Despite using somewhat different approaches and data, these studies have generally concluded that financial markets have predicted the ECB's monetary policy decisions well. This section presents and updates some of these results.¹⁰

There is no single approach to measuring short-term predictability. Consequently, results from empirical studies using different approaches can vary to some degree. For example, measures of predictability can be based on information derived from different money market asset prices or surveys of financial market participants. The time horizon also matters: a shorter horizon focuses the empirical analysis towards the monetary policy decision on a given day and includes the information available to the central bank at the time of the decision, whereas a longer time horizon may incorporate additional information about the future path of monetary policy.

Short-term predictability is most commonly measured using changes in money market interest rates around the time of monetary policy decisions.¹¹ Financial markets follow central bank decisions very closely and market interest rates therefore contain all the information available to the markets about the economic outlook and monetary policy stance at a given point in time. As a result, changes in market interest rates around the time of monetary policy decisions can be interpreted as a measure of the "surprise" element contained in the announced policy decision. In this context, both unexpected changes in the policy rate and no action when a change in the policy rate was expected constitute a surprise. From

these data, "hit rates" – the number of monetary policy decision days when the surprise element was smaller than a given threshold value, divided by the number of all monetary policy decision days – can be calculated (see Chart 2). Higher hit rates indicate a higher degree of predictability. Monetary policy decision days include all days with scheduled meetings of the decision-making bodies, as well as those with unscheduled meetings at which interest rate decisions were taken. In the case of the ECB, this includes the monthly meeting of the Governing Council at which monetary policy decisions are normally discussed.¹²

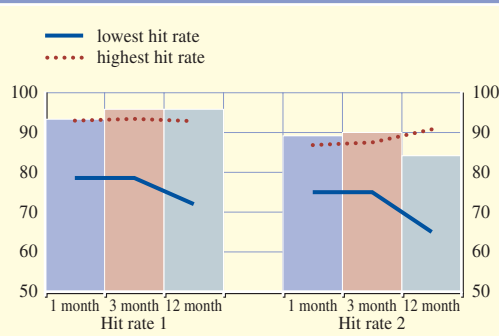
In the exercise considered in this article, two threshold values were used to calculate different hit rates. They are defined as a 12.5 basis point daily change, corresponding to a 50% probability of a 25 basis point change in the policy interest rate (hit rate 1), and twice the normal volatility of daily changes (hit rate 2). While the threshold values and the consequent hit rates are to some extent arbitrary, they are a useful tool for comparing short-term predictability across major central banks. The hit rates are calculated using money market interest rates for assets with three different maturities (one month, three months and twelve months). As shown in Chart 2, the hit rates for different maturities and threshold

¹⁰ The analysis presented in this section closely follows the approach in Wilhelmsen, B.-R. and A. Zaghini (2005), "Monetary policy predictability in the euro area: an international comparison", ECB Working Paper No 504, including data up to 12 December 2005. Examples of other recent studies that also include an international comparison are Connolly, E. and M. Kohler (2004), "News and interest rate expectations: a study of six central banks", Reserve Bank of Australia Research Discussion Paper, and Ehrmann and Fratzscher (2005). See the references in these publications for a more complete list of studies.

¹¹ In this article, the focus is on relatively simple, illustrative indicators of short-term predictability that can be easily compared across currency areas. These indicators were first used to measure the predictability of the ECB in Sicilia, J. and G. Pérez-Quirós (2002), "Is the European Central Bank (and the United States Federal Reserve) predictable?", ECB Working Paper No 192, and they have been more recently applied to data for several other central banks in Wilhelmsen and Zaghini (2005).

¹² Until November 2001 these meetings took place twice a month. Monetary policy decision days also include the decision to lower interest rates taken at an unscheduled meeting on 17 September 2001.

Chart 2 Hit rates of the ECB compared with other major central banks



Sources: ECB calculations based on data from Reuters, the BIS and Global Financial Data.

Notes: Bars indicate hit rates for the ECB and lines represent the range of hit rates for a group of major central banks, i.e. the Federal Reserve System of the United States, the Bank of England, the Bank of Canada, the Reserve Bank of Australia, the Swiss National Bank and the Reserve Bank of New Zealand. For details on the methodology, see Wilhelmsen and Zaghini (2005). The sample period is 1 January 1999 to 12 December 2005 (owing to the unavailability of data, the sample length for some assets in the international benchmark is slightly shorter). The underlying data are based on interbank rates of different maturities (EURIBOR for the euro area).

values indicate a high level of predictability for ECB decisions. The ECB hit rates are high in absolute terms, ranging from a low of 84% to a high of 96%, and in all cases are close to the

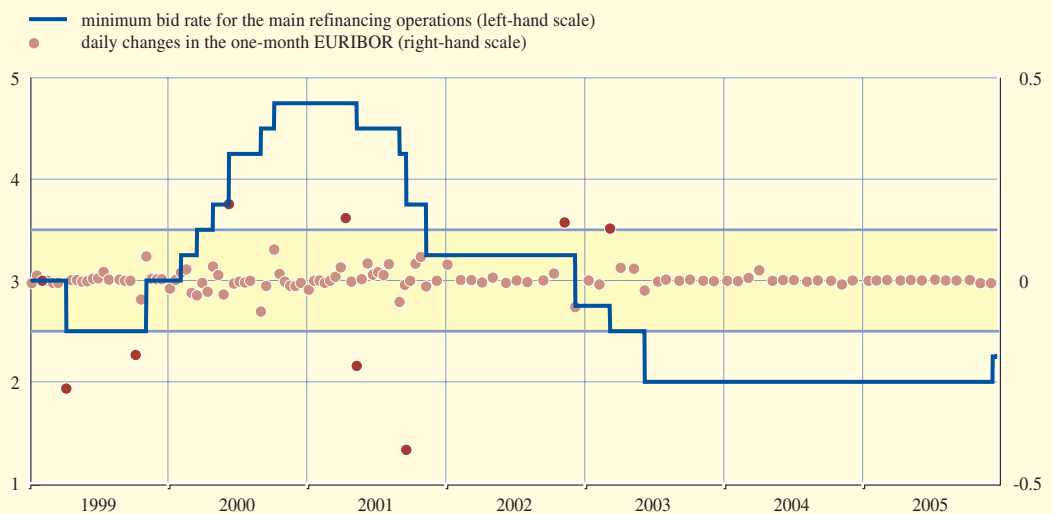
upper bound of the range of hit rates for a group of major central banks. The two hit rates provide similar information, with hit rate 2 providing a somewhat more stringent test of short-term predictability.

Chart 3 shows developments in the minimum bid rate for the main refinancing operations (MROs) of the Eurosystem together with daily changes in the one-month EURIBOR. The light circles close to zero (on the right-hand scale) correspond to days on which the absolute daily change in market rates was smaller than 12.5 basis points, i.e. days on which the financial markets forecast the ECB's monetary policy decisions well. The dark circles outside the band reflect days on which financial markets were surprised by the decision.

The chart further illustrates the high predictability of the ECB's decisions in the short term, as on most days financial markets anticipated the monetary policy decision. These results show that, out of a total of 120 days on which Governing Council meetings were held, financial markets were surprised –

Chart 3 The minimum bid rate and daily changes in the one-month EURIBOR

(percentages per annum; percentage points)



Sources: Reuters and ECB calculations.

Notes: The thin lines represent ± 12.5 basis point threshold values. The circles are daily changes in the one-month EURIBOR around the time of the monetary policy decision day.

according to this definition – on only eight occasions. The greatest surprise occurred on 17 September 2001 when the ECB lowered interest rates at an unscheduled meeting as a response to the exceptional events of 11 September 2001. The surprises are roughly evenly split between days when the policy rate was changed and days when it was not. All surprises that occurred on days when no changes in policy rates were made were followed by a change in policy rates a month later, suggesting that these surprises were related to the precise timing of the decisions. It is also likely that some of the surprises were related to the size of the change in policy rates. This is particularly true for surprises that occurred within longer periods of gradual tightening or loosening of policy rates (such as in early 2000 or early 2003 respectively). Finally, the largest surprises occurred within the first three years of Monetary Union, indicating that the short-term predictability of the ECB may have increased over time. This evidence may reflect the fact that financial markets have gradually learned about the ECB's monetary policy framework and communication.¹³

The announcement of the ECB's policy decision is followed by a press conference at which the President provides a detailed explanation of the economic outlook for the euro area and the risks

to price stability. This communication is aimed at improving the public's understanding of the current decision and the possible future course of policy interest rates. Thus, a separate analysis of the volatility of market interest rates in short time windows around the time of the announcement and the press conference provides a useful starting point for measuring the impact of these events on financial markets. Evidence presented in Box 1 suggests that the volatility of long-term bond futures prices increases around the time that the ECB makes its monetary policy announcements and holds its press conferences, suggesting that both of these events contain information that is relevant to bond markets. However, the increase in volatility is relatively muted and short-lived, which is consistent with the interpretation that the ECB's decisions and its communication have, on the whole, been predictable.¹⁴

¹³ The BIS documents a general improvement in the predictability of major central banks since the mid-1980s (see BIS (2004), Annual Report). In the case of the ECB, the increase in predictability may also be related to the fact that, from November 2001 to December 2005, monetary policy decisions were taken only once a month.

¹⁴ For a discussion of the separate impact of policy announcements and communication in the case of the United States Federal Reserve System, see Gürkaynak, R., B. Sack and E. T. Swanson (2005), "Do actions speak louder than words? The response of asset prices to monetary policy actions and statements", *International Journal of Central Banking* 1(1), pp. 55-93. Complementary evidence based on the communication of the ECB between meetings is presented in Ehrmann and Fratzscher (2005).

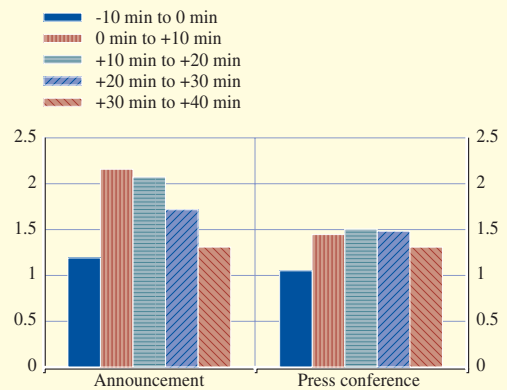
Box 1

THE EFFECTS OF THE ECB'S MONETARY POLICY ANNOUNCEMENTS AND COMMUNICATION ON LONG-TERM BOND MARKETS

Long-term interest rates reflect, among other factors, the views of market participants about the future path of monetary policy rates. As a result, through its monetary policy decisions and related communication, a central bank can have a significant impact on long-term interest rates. This box examines the extent to which monetary policy announcements and communications by the ECB tend to move the market for long-term bonds in the euro area. For this purpose, an assessment is made of how the price volatility of futures contracts on German ten-year government bonds (Bunds) behaves in short intraday time windows around the ECB's statement on its monetary policy decision and the press conference at which the President of the ECB elaborates on the decisions taken.

The price volatility of Bund futures indicates whether and to what extent these policy events contain “news” for market participants that leads them to revise their expectations of the future course of monetary policy. If such events have an impact on market expectations, volatility should increase when compared with a comparatively “eventless” period of time. Even if monetary policy is largely predictable, some market reactions to monetary policy events would still be expected, resulting in increased volatility. First of all, central banks may have conveyed messages to the public that differ in tone from those of previous events. Second, even if a monetary policy decision and communication is fully anticipated and understood by market participants, the events may trigger portfolio adjustments by those individuals who deviated from the on-average correct anticipations. Nevertheless, any increase in market volatility should be relatively moderate and only short-lived. This means that if monetary policy decisions and communication tend to be largely anticipated and well understood, they should not trigger persistently higher uncertainty in financial markets.

Bond price volatility around the ECB's monetary policy decision announcement and press conference



Sources: Tick Data Inc. and ECB calculations.
 Note: The bars represent the ratio of the average realised bond price volatility around the time of the release of monetary policy decisions and the time of the press conference to volatility on corresponding days when there was no meeting of the Governing Council.

To examine how volatility behaves around such times, the average absolute percentage price change in five consecutive ten-minute windows around each event taking place between January 1999 and August 2005 has been calculated. The first window covers the ten-minute period immediately before the announcement, the second covers the ten-minute period immediately after the announcement and the last three windows display average volatility up to 40 minutes after the announcement. These average volatilities are then used to construct a ratio between volatility on monetary policy meeting days and volatility on corresponding days when there was no meeting. A value larger than 1 indicates that monetary policy announcements and communication induced stronger market movements than could be deemed “normal” volatility had the announcements not been made. The greater the news content of an announcement, the stronger the financial market reaction should be. The results for the overall sample period are displayed in the chart.

The market impact following the ECB’s announcement of its monetary policy decisions (see the bar corresponding to the ten-minute interval after the announcement) is reflected in an increase in volatility, which remains at a higher-than-normal level in the third interval (between 10 and 20 minutes after the announcement). However, volatility tends to fall back to normal quickly thereafter. This suggests that monetary policy announcements in the sample period tended to contain some news for the market, and that investors needed some time to fully adjust to the news. However, while the immediate increase in volatility is significant in statistical terms, its impact can still be regarded as relatively muted and it tends to be short-lived.

In a similar manner, higher-than-average volatility can be observed after the press conferences, with volatility also remaining elevated in the third time interval and gradually declining

thereafter. Part of the jump in volatility surrounding the press conference could also stem from the macroeconomic data releases which are published at the same time.

Overall, higher-than-average bond market volatility accompanied the ECB's monetary policy decisions and press conferences. This should reflect investors incorporating into prices the new pieces of information contained in the ECB's communication. However, the increase in volatility is moderate and short-lived, which is consistent with the view that the monetary policy actions taken by the ECB have been quite predictable.

More generally, while asset price volatility is influenced by a number of factors, it also provides a measure of the overall level of persistent uncertainty in financial markets when evaluated over a longer period. This uncertainty may partly originate from a poor understanding of the monetary policy framework. In this respect changes in market

volatility over time may also provide information about possible changes in the predictability of monetary policy in a broader, longer-term sense. Box 2 presents evidence of a recent decline in market uncertainty and tentatively suggests that this decline is indicative of an increase in the predictability of the ECB.

Box 2

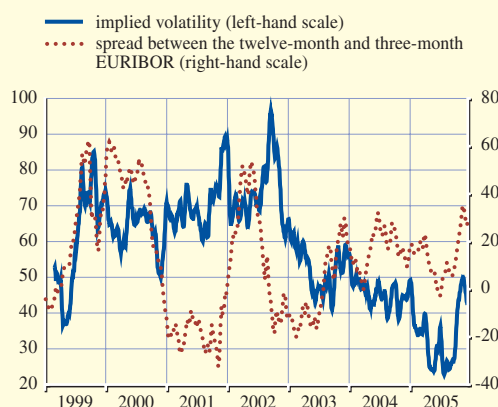
CENTRAL BANK PREDICTABILITY AND IMPLIED VOLATILITY DERIVED FROM OPTIONS ON SHORT-TERM INTEREST RATE FUTURES

A central bank can reduce uncertainty regarding future levels of short-term interest rates by increasing the predictability of its future actions. A widely used measure of uncertainty is implied volatility derived from options on futures contracts on the three-month money market interest rate. This box analyses the developments in the implied volatility derived from three-month EURIBOR futures.

Given appropriate assumptions, implied volatility is normally calculated using option pricing models to obtain an estimate of the expected dispersion of future changes in short-term interest rates measured in percentages per annum. However, this direct estimate can hide very different levels of volatility in the futures interest rates, as it depends on the level of the implied interest rate itself. This is addressed by weighting the implied volatility measured in percentages per annum by the level of the implied interest rate. For instance, a value of implied volatility equal to 20% is equivalent to an annualised expected deviation of 40 basis points in

Euro area implied volatility with six months to maturity derived from options on three-month EURIBOR futures

(basis points; ten-day moving average)



Sources: Bloomberg and ECB calculations.

interest rate changes if the interest rate implied by the futures rate is 2%. This box uses a derivation of a constant maturity measure, obtained on the basis of an interpolation of an implied volatility term curve weighted with a corresponding measure of the implied interest rate.¹

The implied volatility with six months to maturity as derived from EURIBOR futures was, on average, 58 basis points in the period from February 1999 to December 2005 (see Chart). Between the second half of 1999 and the end of 2002 implied volatility fluctuated at around 70 basis points. In the first half of 2003 it fell to a level of around 50 basis points. It should be noted that the level of the ECB's key interest rates was unchanged between June 2003 and November 2005. In 2005 implied volatility averaged 33 basis points.

Overall, high volatility is often associated with periods of significant change in the slope of the money market yield curve as indicated by the spread between twelve-month and three-month interest rates. In particular, the large changes in the slope of the yield curve in 2002 were accompanied by high levels of implied volatility. The changes in the slope of the yield curve observed in 2004 and 2005 are comparable with previous episodes in most of 2001 and 2003. However, the level of implied volatility was significantly below the levels observed in those periods. The increase in implied volatility observed since October 2005 largely reflects uncertainty about the future path of interest rates. However, compared with the previous interest rate increase in late 1999, the level of implied volatility remains very low. Altogether, this supports the view that the ECB may have become more predictable over time. At the same time, this decline in volatility may also have been affected by the macroeconomic environment.

¹ For a more comprehensive discussion on the analysis of implied volatility over longer periods, see the box entitled "Measures of implied volatility derived from options on short-term interest rate futures" in the May 2002 issue of the Monthly Bulletin.

In summary, the evidence presented in this section regarding short-term predictability supports the conclusion that financial markets have generally predicted the ECB's monetary policy decisions well in the shorter term. These results also show that, beyond the impact of the policy announcement in question, the ECB's communication on the day of the decision influences financial markets by providing them with additional information about the ECB's current and future policy decisions. Finally, lower market volatility in more recent years supports the view that understanding of the ECB's monetary policy framework has improved over time.

5 CONCLUSION

In 1999 the ECB, as a newly created central bank, faced a considerable challenge in

establishing a monetary policy framework and communication that would foster predictability. It therefore announced, in late 1998, a medium-term-oriented monetary policy strategy, including a quantification of its objective of price stability and an analytical framework for guiding its decisions. This has been coupled with regular communication which aims to explain the ECB's assessment of the economic situation, the risks to medium-term price stability and the way in which they systematically influence policy decisions.

After seven years of conducting monetary policy for the euro area, empirical evidence confirms that, in applying this approach, the ECB has achieved a high degree of short-term predictability. This is a natural outcome of a monetary policy strategy that emphasises a high level of predictability of central bank behaviour, underpinned

ARTICLES

The predictability
of the ECB's
monetary policy

by transparent, comprehensive and timely communication. In the years ahead, the ECB will remain committed to fostering a genuine understanding of its monetary policy. This is essential for the effectiveness of its monetary policy and contributes to its accountability vis-à-vis the public at large. However, it should be recognised that short-term predictability is not an objective of monetary policy per se and that there are limits to further increases in the ability to anticipate the next policy decisions.