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The Role of Transparency
in the Conduct of Monetary
Policy

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By Makoto Minegishi and Boris Cournède

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ABSTRACT/RÉSUMÉ

The role of transparency in the conduct of monetary policy

In contrast to the once prevailing norm of secrecy and opaqueness, transparency has now become one of the main features characterising the conduct of monetary policy. Detailed analysis of eleven OECD central banks shows that communication practices have converged markedly in the direction of ever greater transparency. Empirical evidence is consistent with the hypothesis that transparency contributes to the successful conduct of monetary policy: higher transparency is a typical element of monetary frameworks that are associated with better anchored inflation expectations and more stable inflation outcomes. Despite this general trend toward increased transparency, however, central banks differ in actual communication practices. There is a particular divergence with respect to transparency in the decision-making process and communication regarding future policy inclination. Although the appropriate degree of transparency in these areas is an unsettled issue, the fact that financial dislocation is impairing conventional monetary transmission makes these two areas critical for policy implementation.

JEL codes: E31; E50; E52; E58.

Keywords: transparency; communication; monetary policy; inflation expectations.

Le rôle de la transparence dans la conduite de la politique monétaire

À rebours des habitudes de secrets et d'opacité qui ont pu prévaloir par le passé, la transparence constitue désormais un moyen essentiel de mise en œuvre de la politique monétaire. Une étude approfondie des pratiques de 11 banques centrales de la zone OCDE confirme la convergence vers toujours plus de transparence. Les résultats empiriques sont cohérents avec l'hypothèse selon laquelle la transparence contribue à l'efficacité de la politique monétaire : en moyenne, les cadres de politique monétaire qui fournissent un meilleur ancrage des anticipations d'inflation et une inflation plus stable s'appuient sur un niveau plus élevé de transparence. Malgré une tendance générale vers davantage de transparence, les pratiques de communication diffèrent encore sensiblement d'une banque centrale à l'autre. Les divergences sont particulièrement marquées s'agissant de la transparence à propos des procédures de décision et de l'orientation future de la politique monétaire. Bien que le degré optimal de transparence sur ces deux sujets demeure un objet de débat, le fait que les troubles financiers actuels obèrent les canaux traditionnels de transmission de la politique monétaire donne à ces deux questions une importance toute particulière.

Classification JEL : E31; E50; E52; E58.

Mots-clefs : la transparence ; communication ; la politique monétaire; anticipations d'inflation.

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THE ROLE OF TRANSPARENCY IN THE CONDUCT OF MONETARY POLICY

by

Makoto Minegishi and Boris Cournède^{1,2}

Introduction

1. While the case for central bank independence had gained support following generally poor macroeconomic performance (high inflation in particular) in the 1970s and early 1980s, it is no coincidence that central bank independence has come to be characterised by higher transparency. Indeed, in a democratic setting, the delegation of authority to an independent central bank requires accountability, of which transparency is a key ingredient. Over the past decade, central banks have adopted more transparent communication strategies and for some the trend has even appeared to accelerate in recent years. Central bank accountability has not been the only motivation: the need to secure credibility has also been an important factor. Acquiring credibility was particularly important in the early years of inflation targeting. In this context, transparency can help to persuade the public that the central bank is firmly committed to a low-inflation regime. Moreover, it has become all the more important to anchor inflation expectations given the recent emergence of a deflation risk in some countries and the fact that the zero lower bound constraint on the nominal interest rate has indeed become binding in a number of countries.

2. Meanwhile, the ongoing financial crisis that has prompted a series of aggressive policy responses from central banks has put the role of communication once again to the fore. Despite this general trend toward increased transparency, however, central banks differ in actual communication practices. No “best” or “optimal” form of communication has yet emerged, and communication remains a priority – and a challenge – for central banks. Given that central banks work within different mandates and institutional frameworks, it is unlikely that a common strategy would be optimal and this study does not set out to identify one. The paper deals with two broad questions related to the communication strategies of central banks: “how transparent are central banks?” and “what are the macroeconomic consequences of transparency?”. For the purposes of the study, an index of transparency has been constructed covering eleven OECD central banks based on a detailed investigation of their communication practices from 1999

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to the second quarter of 2009. Measures of macro-economic performance have then been evaluated against the index. The main conclusions are:

- The index and its subcomponents show that communication practices have converged strongly across the economies considered, in the direction of ever greater transparency.
- Empirical evidence is consistent with the hypothesis that transparency does contribute to the successful conduct of monetary policy: higher transparency is found to be an integral part of monetary frameworks that are associated with better anchored inflation expectations and more stable inflation outcomes.
- There is a divergence with respect to transparency in two areas: the decision-making process and communication regarding future policy inclination. Although the appropriate degree of transparency in these areas is an unsettled issue, the fact that financial dislocation is impairing conventional monetary transmission and that a risk of deflation still exists makes these two areas critical for policy implementation.

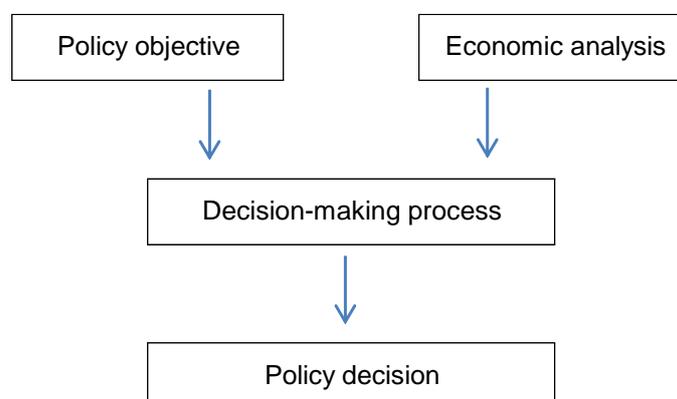
3. The rest of the paper is structured as follows. First, the actual communication practices of eleven central banks over the past decade are examined in detail, and based on this review a quantitative index of transparency is constructed. The pros and cons of transparency are then summarised, prior to using the constructed quantitative index of transparency for the empirical analysis linking transparency to macroeconomic outcomes. The paper concludes with some policy implications relating to the current economic conjuncture.

How transparent are central banks?

What is transparency?

4. The first step is to clarify what is meant by transparency. Transparency is a multifaceted concept that encompasses various aspects of central banking.³ This paper follows Ferguson (2001 and 2002) in taking the basic definition of transparency as “the openness of a central bank in stating its monetary policy decision and explaining the reasoning behind them”. Transparency can then be understood to be embodied in four aspects of the communications practices of central banks with respect to monetary policy decisions. There is a monetary policy objective that must be fulfilled (transparency about *policy objective*) and monetary policy decisions are taken in order to achieve this objective (transparency about *policy decisions*). Given that the effects of monetary policy come with some lags, these decisions must be underpinned by forward-looking economic analysis, including inflation and output projections (transparency about *economic analysis*). In addition, information on the process leading to a particular decision may also matter, particularly in a committee setting (transparency about the *decision-making process*). The basic concept of transparency is illustrated in the following diagram (Diagram 1). The four aspects of transparency are discussed in detail below. Within each category, several defining characteristics are identified to account as far as possible for the variety of actual communication practices across central banks.

3. Existing surveys on the subject often take a very broad view of transparency, defining it as a situation where there is no asymmetric information regarding monetary policy making. These studies also tend to propose a classification of different categories of transparency based on some conceptual framework about what authors deem *should* constitute transparency. For example, Eijffinger and Geraats (2006) propose five categories of transparency: political, economic, procedural, policy and operational. Hahn (2002), instead, distinguishes three dimensions: goal, knowledge and operations.

Diagram 1. A definition of transparency is structured around policy decisions

5. The focus on these four elements has turned out to be particularly useful in the discussion of communication practices, also because overall monetary policy frameworks across major OECD central banks appear to have come to exhibit a number of common characteristics in these areas, as the current investigation illustrates. In this regard, it is worth noting that these common features are not confined to a particular monetary policy regime, such as inflation targeting. First, central banks embrace the objective of price stability in one form or another. Second, when implementing policy, the reliance on use of short-term interest rates and fixed-date scheduled meetings have become the norm.⁴ Third, monetary policy decisions have been increasingly made in a forward-looking manner. Fourth, central banks increasingly pay attention not only to decisions themselves but also to decision-making processes. Therefore, variations in actual practices of central banks in these areas can be largely attributed to different communication strategies, rather than to more fundamental divergences of views over the way monetary policy should operate.

6. In this framework, the paper investigates the communication practices of 11 central banks of OECD countries – the Federal Reserve (Fed), European Central Bank (ECB), Bank of Japan (BoJ), Bank of England (BoE), Bank of Canada (BoC), Sveriges Riksbank, Swiss National Bank (SNB), Norges Bank, Reserve Bank of Australia (RBA), Reserve Bank of New Zealand (RBNZ) and Bank of Korea (BoK). The time span stretches from 1999 to the second quarter of 2009.⁵ The eleven central banks have been selected on the basis that their monetary policy implementation and macroeconomic developments have been broadly comparable over the period considered.⁶ The aims of the investigation are three-fold. The first is to document how communication practices of each central bank have evolved over time. The second is to examine how communication practices differ across central banks. Third, each element of the investigation of the practices is used as a basis for constructing a quantitative index of transparency. The Appendix sets out the details of each element of communication practices investigated.

4. “Unconventional” measures adopted in response to the crisis, however, tend to come with more variations across central banks.

5. The analysis starts from 1999, both because this corresponds to the year in which the ECB took over monetary policy responsibility from national central banks and because information prior to 1999 is often significantly more difficult to obtain.

6. For instance, Denmark has been excluded from the investigation because its monetary policy is aimed at pegging the exchange rate against the euro. Similarly, the analysis does not cover transition economies in Eastern Europe or emerging countries with significantly higher inflation rates (*e.g.* Turkey) for the sake of comparability.

7. The analysis relies on information publicly available from central banks' websites. As the investigation has been intended to cover overall communication practices, a wide range of materials has been analysed, ranging from statutory documents (treaties, constitutions, central bank laws, etc.), through formal agreements with governments to central bank press releases and other publications. While press conferences and testimonies often constitute an important part of communication strategies, given the difficulty of accounting consistently and systematically for messages communicated only orally, especially *via* question and answer sessions, the analysis focuses on four different types of documentation: i) documents that define central banks' policy objectives (which many are of a statutory nature), ii) policy decision statements, iii) published projections and iv) minutes. By the same token, occasional speeches offered by high-ranking central bank officials are not taken into account.⁷

8. The investigation into each aspect of transparency is inspired by previous attempts of the same nature. Fry *et al.* (2000), Eijffinger and Geraats (2006), Dincer and Eichengreen (2007) and Geraats (2008), provide detailed accounts of central bank transparency. The present investigation extends previous analysis in three respects. First, it incorporates the most recent major changes that have taken place. Second, as previously discussed, the investigation embraces monetary policy decisions *and* all regular processes leading up to them, which are summarised as four main aspects of communication. Third, some elements (most notably those relating to economic projections) have been investigated in detail to account for the variety of practices. Lastly, the analysis is limited to those elements of transparency for which central banks are responsible.⁸ One important caveat should be noted: the small size of the cross-section does not permit an analysis of how communication strategies in advanced economies differ from those in emerging economies or how more fundamental difference concerning monetary policy frameworks (e.g. fixed exchange rate, monetary targeting, etc.) can affect communication practices, as is possible with Geraats' (2008) indicator.

Transparency about policy objective(s)

9. The first and the most fundamental layer of transparency is whether and how central banks communicate their ultimate *monetary policy objective(s)*. In particular, when multiple objectives are set that are potentially conflicting, the hierarchy among them – the way they should be weighted – is an issue. Related to this is whether the policy objective involves some degree of *quantification*. The investigation also covers clarity as to the *time-horizon* to achieve the stated quantitative objective.

10. A potentially important feature of transparency with respect to objective setting relates to the way objectives are institutionally defined. Often, the policy objectives are “given” to central banks statutorily or by government decision. There are, however, cases of more active involvement in policy setting on the part central banks, with policy objectives either being decided jointly between the central bank and the government or adopted voluntarily by the central bank.⁹ No distinction is made here as to the provenance of the monetary objective, though it might in principle affect its credibility.

7. While virtually all central banks actively use speeches, which often address issues that might have monetary policy implications (e.g. asset prices), their flexibility both in terms of timing and content makes it difficult to categorise them systematically for inclusion in the index.

8. Both Eijffinger and Geraats (2006) and Hahn (2002) list the availability of certain economic statistics as one of the criteria for transparency, even though the central bank does not always compile the statistics. While central banks may actually initiate new statistics, it would probably be more appropriate to regard the availability of economic data as an external constraint for central banks, rather than as a measure of transparency of monetary policy setting.

9. For details of individual cases, see the Appendix.

11. Most central banks are now generally quite clear on this aspect of transparency, with some differences as to how the monetary policy objective is quantified.

- *Definition of policy objective.* As of the second quarter of 2009, ten out of the eleven central banks surveyed define their primary objective of monetary policy implementation as price stability.¹⁰ The notable exception is the Fed, which has multiple objectives (maximum employment, stable prices and moderate long-term interest rates) with no stated hierarchy among them.
- *Quantification of policy objective.* All central banks surveyed here now give some quantified guidance as regards policy objective in one form or another. Seven central banks (BoE, BoC, Riksbank, Norges Bank, RBA, RBNZ and BoK) are inflation targeters that pursue explicit quantitative inflation targets. While the ECB and SNB do not describe themselves as inflation targeters, they nonetheless give clear quantitative definitions of price stability. The BoJ also gives some quantitative guidance as to its board members' understanding of what constitutes price stability, although it falls short of setting a fully explicit policy target and the definition is less well-established.¹¹ While the Fed, too, does not give a quantitative target or definition, its "longer-term" projections effectively reveal a range of numerical values for key variables that its decision-makers deem consistent with its policy objective of stable prices and maximum employment.
- *Time horizon to achieve the objective.* While the BoK is the only central bank whose inflation target scheme clearly encompasses the time-horizon to achieve the target, two other central banks (BoC and Riksbank) nonetheless disclose a specific time period within which the inflation target should normally be achieved. For the BoE, the inflation target must be met at all times and, in case of a large deviation from the target, the Governor must specify in an open letter the period within which the return to the target is expected. On the other hand, for the RBNZ, the inflation target as defined in the Policy Targets Agreement can be understood to apply for the Governor's term in office. Finally, three central banks (ECB, RBA and RBNZ) give a rough indication that their quantitative policy objective is applicable over the medium term or the cycle.
- *Evolution over time.* Partly because transparency in respect of objectives often (but not necessarily) involves changes in the formal institutional setting, such as a revision of the central bank law or a new agreement with the government, changes in the actual practice of objective setting are less frequent than changes in other aspects of transparency. Even so, occasional changes have been observed in the past decade, resulting in enhanced transparency in this area (such as for the SNB in 2004 with the revision of the National Bank Act, the BoJ in 2006 with the publication of quantitative guidance on its policy objective and the Fed in 2008 with the extension of projections to three years and in 2009 with the extension of projections to include "longer-term" projections).¹²

10. The focus here is on monetary policy objective, rather than general institutional objectives that may embrace other functions of central banking (*e.g.* issuing currency or maintaining and promoting financial stability).

11. In particular, unlike the ECB and SNB that define price stability explicitly, the BoJ's "understanding" of price stability, as well as the longer-term projections of the Fed, is based on views of each voting member and is required to be re-examined on a regular basis.

12. There has also been occasional refinement in the way policy objectives are quantified. For instance, in 2003 the ECB changed its definition of price stability to below "but close to" 2% to clarify its intention to avoid deflation. In 2004, following a government decision, the base index for BoE was changed from RPIX to CPI, which was accompanied by a change in the level of the target.

Transparency about policy decisions

12. This aspect of transparency relates to how monetary policy decisions are communicated to the public. Here, two types of policy decisions are distinguished – a decision to *change the policy stance* and a decision to *keep the policy stance unchanged*. The latter is of particular interest given that all central banks in the sample are now operating under a scheme of fixed-date schedules for monetary policy decisions. For each type of policy decision, the investigation distinguishes between the *announcements* of the decision itself and the *explanations* that are given to motivate it. Whether and how central banks give *explicit guidance on future policy direction* is also investigated.

13. While communication practices for the announcement and explanation of current policy stances have more or less converged, central banks still differ widely on how they communicate their future policy inclination.

- *Announcement of decisions.* All eleven central banks always make an immediate announcement, even when the policy stance is unchanged.
- *Explanation of rationale.* Explanations for the decision are always given either in written form in the policy decision statement, by way of a press conference or through a combination of both when the policy stance changes. The same practice now generally applies also for decisions to keep the policy stance unchanged, except for the BoE, which does not usually give explanations on such occasions.¹³
- *Future policy guidance.* Three central banks (Riksbank, Norges Bank and RBNZ) publish quantitative paths for their own policy rate projections conditional on economic outlook as a basis for communicating future policy inclination. Major characteristics of this approach include unambiguousness, a clear linkage to economic projections and a relatively long-horizon over which the guidance is provided. Some central banks (Fed, BoJ, RBA and BoK) usually complement their policy decision statements with verbal forward-looking guidance. The horizon is typically much shorter than that of projections of own policy paths, however, and the degree of guidance varies across central banks and over time. The BoC also follows this approach but it now offers more explicit conditional commitment with a specific time horizon over which the verbal guidance is applicable. Other central banks (ECB, BoE and SNB) do not formally give future policy guidance. A use of particular code words during a press conference, however, may be interpreted as a signal for policy changes in the immediate future (*e.g.* at the next policy meeting).
- *Evolution over time.* As of 1999, most central banks had already established the practice of announcing and explaining decisions to change the policy stance.¹⁴ Some changes have been subsequently observed for the communication of decisions to keep policy unchanged. Three central banks (BoC, Norges Bank and RBA) used to give a statement and explanation only when the policy stance was changed, but they are now doing this also when policy is unchanged (BOC from 2000, Norges Bank from 2002 and RBA from 2007). The ECB and BoJ now provide explanations systematically (ECB from 2001 and BoJ from 2003), whereas previously there were some occasions when no explanation was given for decisions to keep policy unchanged. As to

13. For BoE, explanations are usually given for policy changes but not when the previous policy was kept unchanged. However, a very limited number of exceptions exist (no explanation for policy changes, or explanation even when policy was kept unchanged).

14. This was not always the case in the past. For instance, it was not until 1994 that the Fed decided to announce officially its policy changes immediately after the policy meeting.

future policy inclination, the RBNZ was the first central bank to publish its own policy rate projection, followed by Norges Bank (from 2005) and Riksbank (from 2007). The Fed has been providing verbal forward-looking guidance in policy decision statements since May 1999, a practice which has also been adopted by some other central banks that had previously tended to make use of less frequent publications of projections (Norges Bank from 1999 until 2005, BoC from 2002, Riksbank from 2004 to 2006, BoJ and BoK from 2008). The most recent development is the BoC decision to enter into a conditional commitment with an explicit time horizon as from April 2009.

Transparency about economic analysis

14. Any policy decision needs to be underpinned by economic analysis. Although research undertaken by central banks can cover a wide range of fields and issues, the focus here is on policy-related forward-looking analysis that feeds into its own inflation and output projections. This is of particular importance, as monetary policy affects the economy only with significant lags. Although all the eleven central banks covered in the analysis now publish economic projections, their nature and amount of detail vary widely. Thus, to account for different practices, as well as for the gradual but constant evolution over time, a detailed investigation has been made covering several specific aspects of central banks' projections. The first group of questions relates to how projections are presented – in this respect, *frequency of publication* and *endorsement by the decision-making body* are the two relevant criteria. The second group of questions concerns the content of the publications. Central bank projections usually cover *inflation and output*; four detailed questions are addressed for each – the *degree of detail of the projection* (whether the full projection is available or only a short verbal description is given); *projection time horizon* (how far into the future does the projection go); *projection time frequency* (whether quarterly, semi-annual, or annual projections are available); and *uncertainty* (whether a risk distribution surrounding the most likely scenario is presented).¹⁵ Information about *underlying assumptions* (such as exchange rate, commodity prices and interest rates) is also relevant, as they can have a significant impact on the interpretation of the projections, even when they are mostly of a technical nature.

15. Although all of the eleven central banks now publish their own projections, there are considerable differences across central banks in how these projections are presented.

- *Frequency of publication.* As of the second quarter in 2009, the publication of central bank projections has generally become quite frequent, three times a year for Norges Bank and BoK and quarterly for eight central banks (Fed, ECB, BoJ, BoE, BoC, SNB, RBA and RBNZ). The Riksbank even publishes projections six times a year (for each regularly-scheduled monetary policy decision meeting).
- *Endorsement of decision-making body.* Projections are for the most part made or endorsed by the decision-making body. The ECB is an exception, as its projections are not endorsed by the ECB Governing Council but are presented as those by staff members, even when they are prepared jointly by and agreed among the national central banks of euro area countries and the ECB; the Governing Council merely communicates its 'risk assessment' on this staff projection. The BoK also publishes staff projections without official endorsement from the decision-makers.¹⁶ The

15. As regards the first element, "full" projections here mean that inflation and output projections are presented in a reasonably clear fashion (most typically, in the form of tables or charts), as opposed to a more qualitative description of the outlook. It does not necessarily imply that central banks disclose projections for a wide range of indicators.

16. Projections by the decision-making body used to be available in Monetary Policy Report from 2003 and 2008. In 2009, projections have been eliminated from the publication.

projections of the Fed and BoJ are based on those submitted by individual members of the decision-making body; hence there is no single set of projections as agreed by the decision-making body.¹⁷ The remaining central banks publish projections as a representative view of the whole decision-making body.

- *Nature of projections.* Ten central banks now publish full projections of both inflation and output (Fed, ECB, BoJ, BoE, BoC, Riksbank, Norges Bank, RBA, RBNZ and BoK), the SNB being the only exception as its output projection remains quite brief and significantly less detailed than its inflation projection.¹⁸
- *Projection time horizon.* The projection time horizon has generally become quite long, with four central banks (BoE, Riksbank, Norges Bank and RBNZ) always publishing three-year-ahead projections. The Fed publishes yearly projections up to three years ahead plus what it calls “longer-term” projections. The time horizon for the SNB and RBA projections are between two to three years ahead, partly depending on the timing of the publication. Other central banks present projections up to about two years ahead (ECB and BoK) or occasionally a little longer (BoJ and BoC).
- *Projection time frequency.* Regarding projection time frequency, five central banks (BoE, Riksbank, SNB, Norges Bank and RBNZ) publish quarterly projections and the RBA publishes semi-annual projections, with the BoC a mixture of both (quarterly projections in the immediate future followed by semi-annual projections). The BoK publishes semi-annual projections in the immediate future followed by annual projections. The ECB and BoJ only publish projections for annual averages, while the Fed is a special case, in that it shows annual projections as fourth-quarter-to-fourth-quarter changes.
- *Uncertainty.* The BoE, BoC, Riksbank and Norges Bank are clearest about the uncertainties surrounding the projections, which are summarised in a fan chart.¹⁹ The BoJ now effectively tries to convey similar information by making use of a “risk balance sheet”, where minimum, central and maximum projections by each voting member are summarised. The Fed also publishes a distribution of each participant’s central projection. The ECB gives its projections as a range, but this is not presented in a way which gives information as to the skewedness of risks.²⁰ The remaining central banks (SNB, RBA, RBNZ and BoK) only show point projections, with no quantitative information concerning uncertainty.

17. The Fed also discloses staff projections submitted for discussion at the policy meetings. While the staff projections are far richer in content, often encompassing views of the structure of the economy, they are only available with about a five-year lag.

18. Output projections mostly relate to real GDP growth. Occasionally, output gap estimates of central banks is also shown.

19. Indeed, for the BoE, no central projection is shown, the focus being on the projection range (*i.e.* uncertainty) as expressed in the fan chart. For the BoC, fan chart is given only for inflation projections.

20. Until the July 2008 projections, the ranges was based on past projection errors. From September 2008, following a change “of a purely technical nature”, some Bayesian techniques have started to be implemented (ECB, 2008). The new method, however, has not led to any significant changes in the uncertainty range, which still evolves only very gradually over time, based on past projection errors irrespective of the *current* degree of risk.

- *Underlying assumptions.* Lastly, many central banks (ECB, BoE, BoC, Riksbank, SNB, Norges Bank, RBA, RBNZ and BoK) give an extensive account of their underlying assumptions, while information on this aspect is quantitatively limited for BoJ. The Fed remains quite opaque as to underlying assumptions.²¹
- *Evolution over time.* As described above, there are still considerable differences across central banks. Yet, publication of economic projections is an area where great changes have been seen over the past decade. First, central banks that used to publish no projection have chosen to do so (ECB and BoJ both in 2000 and BoK in 2002). Second, those that had only given rough and short accounts of the economic outlook decided to publish fuller and more formal projections (BoC in 2003 and RBA in 2007). Third, publications have become more frequent, moving from semi-annual to quarterly (BoC and SNB in 2000, ECB in 2004 and Fed and BoJ in 2008). Fourth, the projection time horizon has been constantly extended (Fed and BoJ both in 2005 and 2008, BoE in 2004, BoC in 2003 and 2006, Riksbank and Norges Bank both in 2005).²² Fifth, the time frequency of projection information has increased (BoC in 2003 and RBA in 2007). Lastly, treatment of inflation and output projections has become more symmetrical, whereas in the past the outlook projection was often less detailed than the inflation projection.

Transparency about the decision-making process

16. This aspect of communication is related to how central banks disclose the decision-making process leading to policy decisions. Within this category, three vehicles of communication are distinguished: 1) minutes, 2) voting records and 3) press conferences. Central banks may wish to publish the *minutes* of the decision-making meeting in which information about how a decision has been reached is revealed in detail, usually including dissenting opinions. In addition, *voting records* with attribution may also be made available either in minutes or, for some central banks, immediately with the announcement of the policy decision. Additionally (or alternatively), some central banks may rely on *public appearances* such as press conferences or testimonies before the legislature.

17. This is an area, particularly with respect to minutes and voting records, where differences across central banks remain quite striking: while some central banks (*e.g.* Fed, BoJ, BoE and Riksbank) are quite forthcoming, four central banks (ECB, BoC, SNB and Norges Bank) publish neither minutes nor a voting record.²³

21. With respect to its interest rate assumptions, the BoJ makes it clear that that the projections are based on market expectations, while the Fed simply states that the projections are based on what each member perceived as “appropriate monetary policy”. For other underlying assumptions they are equally unclear. The relative lack of information from the Fed and BoJ in this regard may be explained by the fact that the projections are based on those made individually by each member, possibly with various underlying assumptions, rather than as a single consensus view.

22. One exception is the BoK, whose projection time horizon has been shortened. In the early years of implementation, inflation projections presented in the Monetary Policy Report covered up to three years ahead. Subsequently, the time horizon for the projections has been significantly shorted to three quarters. Moreover, Monetary Policy Reports ceased to contain projections in 2009 and fan charts have also become unavailable.

23. The extent to which decisions to publish voting records may be driven by institutional constraints, which may differ between national and supra-national central banks, is discussed below.

- *Minutes.* Six central banks publish minutes (Fed, BoJ, BoE, Riksbank, RBA and BoK). Many of them (Fed, BoE, Riksbank and RBA) now publish them in a very timely fashion, with a lag of only two to three weeks and available before the next meeting. BoJ minutes are made available shortly after the subsequent meeting and those of BoK appear with an even longer lag.
- *Voting records.* Except for the RBA, the central banks covered here disclose voting records in minutes. The Fed, BoJ and Riksbank even disclose voting records in the policy decision statement released immediately after each policy meeting.²⁴
- *Public appearance.* All central banks make public appearances on a regular basis. The Fed, SNB and RBA do so at least twice a year, either in the form of testimony before the legislature or a press conference. Other central banks organise press conferences more frequently. The BoE, BoC and RBNZ hold press conferences after the publication of economic projections (usually quarterly). For some central banks, press conferences are an integral part of the monetary policy meeting (ECB, BoJ, Norges Bank and BoK after every meeting and Riksbank when monetary policy stance is changed).²⁵
- *Evolution over time.* Among the five central banks that publish minutes, the RBA is a newcomer, having started publication in 2007. A characteristic of the other four is that they have all expedited the release of the minutes (Fed from 2005, BoJ from 2000 and BoK from 2005). The tendency to expedite the release also applies to the voting record: the Fed, BoJ and Riksbank decided to make the voting record immediately available, where the record had previously been disclosed only at the time of the publication of minutes (Fed in 2002, BoJ in 2007 and Riksbank in 2009).²⁶ Lastly, with respect to press conferences, few changes have been observed over time, except for minor ones at the ECB and BoJ (from every month to every rate-setting meeting).

Summing up: a proposed index of central bank transparency

18. This section proposes an index of central bank transparency based on the above-described findings. Scores are given for each of the detailed components outlined above. These are then aggregated to scores for the four main aspects of transparency (policy objective, policy decision, economic analysis and decision-making process) using equal weights within each category.²⁷ The four main aspects are in turn aggregated into an overall index, again using equal weights. The scoring at the detailed level ensures that differences in practice, both across central banks and over time, are reflected in the index. The basic structure of this scoring scheme is presented in Diagram 2, and a more detailed account of how the index is constructed can be found in the Appendix.

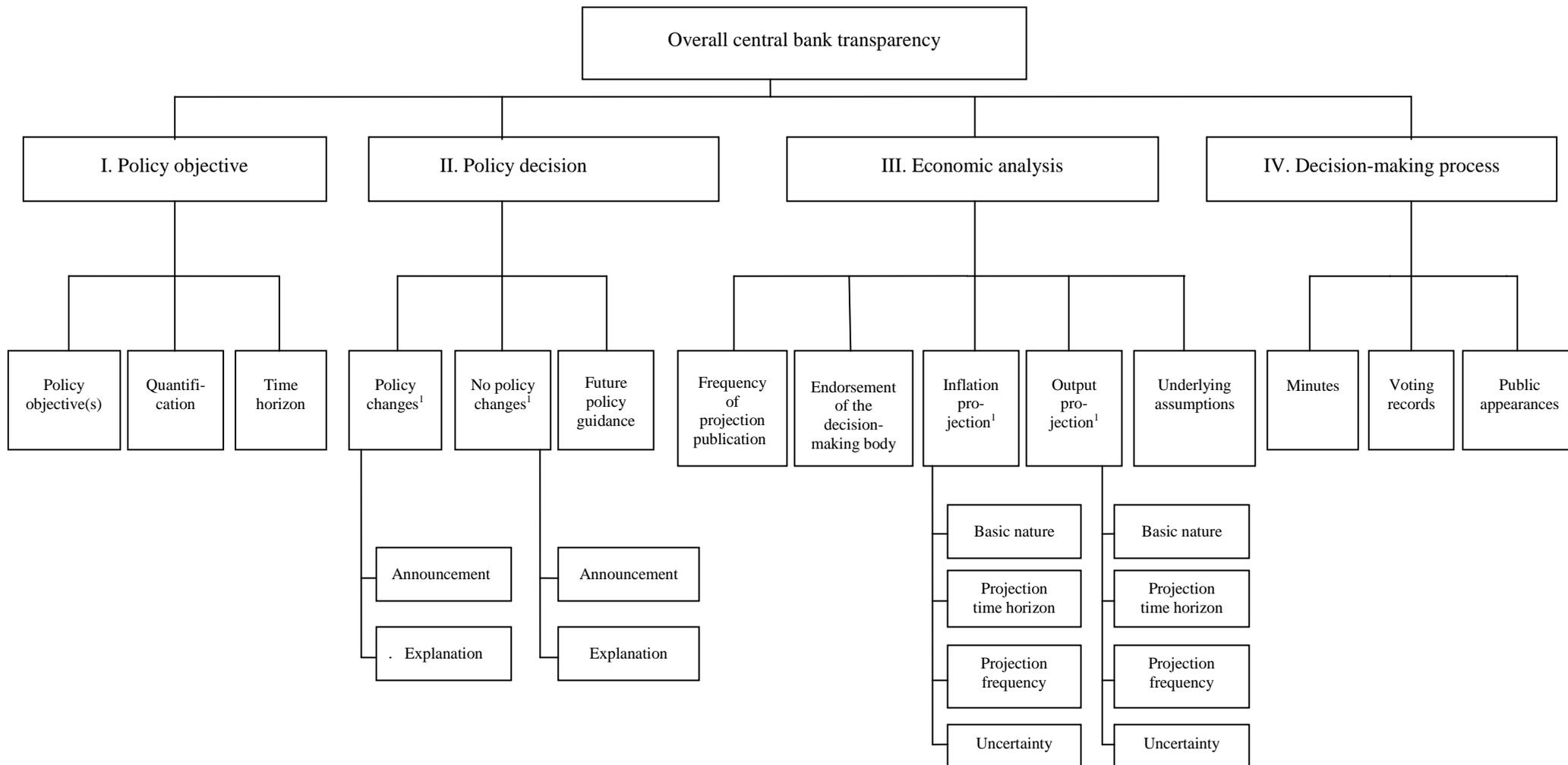
24. The statement of the Riksbank and the Fed (at least from 2005) also briefly discusses dissenting opinions.

25. ECB, BoJ, Norges Bank and BoK hold monetary policy meetings at least once a month. The Riksbank holds monetary policy meetings about six times a year.

26. Meanwhile for the Riksbank, it was in 2002 that the voting record was made more explicitly available in minutes. Although dissenting opinions, whenever available, have always been presented as “reservation”, the minutes for May 2002 meeting were the first to make clear that those who did not express a reservation are in agreement with the final decision.

27. As a robustness check, random-weightings technique has been implemented, as discussed below.

Diagram 2 Basics of scoring scheme



Note: Each element is aggregated to a higher level using equal weights.

1. No aggregation is made at this level.

19. Summarising the degree of central bank transparency in quantitative indices involves some subjective choices with respect to practices to be covered, how points are allocated to each question and the weights used to aggregate the individual elements.²⁸ Most fundamentally, transparency is a complicated process in which the transmission of information is not cost-free. The degree of detail with which information is available may not always translate into a better understanding of monetary policy (Winker 2000). Also, while the index aims at summarising what central banks are doing, it does not allow for the institutional differences which may help explain why communication practices may differ. In particular, central banks may be constrained by the composition of the decision-making body and the way decision-makers are appointed, etc. For example, the fact that the ECB is a supranational institution where the majority of monetary policy committee members are nationally appointed means that it must guarantee its independence from national pressure, a concern no other central bank shares.²⁹

20. Communication strategies also have to be adapted to the broader macroeconomic environment. For instance, an explicit inflation target over a specified time-horizon may be appropriate for driving inflation expectations down, but may not work when inflation is negative and needs to be brought back up, particularly if credible ways of achieving the target are not easily available. Finally, one aspect of transparency may substitute for another: for instance, the availability of minutes and voting records *de facto* gives future policy guidance even when a central bank is not explicit on that matter. Notwithstanding these caveats, a quantitative index may be helpful in facilitating the comparison of communication practices both across central banks and over time and permits an empirical analysis of the consequences of transparency.

21. A number of findings emerge from the index of transparency which can be summarised as follows (Table 1 and Figures 1 to 3).

- While transparency with respect to policy objective and policy decision have now largely converged, albeit with a few notable exceptions, central banks differ significantly in their transparency related to economic analysis and particularly in the decision-making process.
 - Regarding transparency of policy objective, inflation-targeting central banks (BoE, BoC, Riksbank, Norges Bank, RBA, RBNZ and BoK) and those which explicitly operate with a quantitative definition of policy objective (ECB and SNB) achieve higher scores. The BoJ (due to less precise quantification and absence of time-horizon) and in particular the Fed (due, additionally, to its dual mandate with no explicit weights) score relatively low on this sub-index.
 - As regards transparency of the policy decision, all central banks achieve comparably high scores, apart from the BoE, which gives no explanations when policy remains unchanged.
 - Central banks show slightly more variability in relation to transparency of economic analysis. The Riksbank, BoE and Norges Bank, and RBNZ to a lesser extent, are particularly transparent in this area as they present projections with long horizons, quarterly profiles and, except for RBNZ, measures of uncertainty by way of fan charts.

28. The overall measure of transparency presented below, however, is generally consistent with the findings of previous work. Taking the most recent year for which data are available (2002 and 2006 respectively) and for the central bank commonly in the sample, the present measure is correlated with that of Eijffinger and Geraats' (2006), with a coefficient of 0.9, and that of Dincer and Eichengreen's (2009), where the coefficient is 0.7.

29. For instance, Issing (2005) emphasises this point in defending the ECB's practice of not publishing minutes and voting records.

- The difference is even more striking when it comes to the transparency of the decision-making process, as largely gauged by the availability of minutes and voting records. While five central banks (Fed, BoJ, BoE, Riksbank and RBNZ) form the most transparent group, with more or less comparable scores, the other central banks are some distance behind, with dispersed scores (RBA and BoK, ECB, Norges Bank, BoC and SNB in that order).
- According to the overall measure, the Riksbank is the most transparent central bank as of the second quarter in 2009, followed by the RBNZ and BoE. Four central banks (BoJ, BoC, RBA and Norges Bank) make up the intermediate group, followed by the BoK, Fed, ECB and SNB. To examine the sensitivity of the result for the overall index to the choice of equal weighting under each category, a robustness check has been conducted using a “random weights” technique.³⁰ The result (Figure 4) confirms that the Riksbank is the most transparent central bank. It also shows that the remaining central banks can be categorised into three groups, depending on the degree of transparency. The confidence intervals suggest, however, that the differences within each group are dependent on the choice of weights.
- Over time, a conspicuous common trend toward increased overall transparency can be observed, which, for some central banks, has accelerated in recent years (*e.g.* Fed, BoJ, BoC, Riksbank and RBA). Increased transparency has been most evident in respect of economic analysis, followed by the decision-making process and policy decision. Transparency on policy objective and policy decisions have been relatively stable.

30. For aggregation from the lowest-level criteria to the overall transparency, the random weights technique uses 10 000 sets of randomly-generated weights, resulting in 10 000 different values. Thus, the resulting distribution reflects the possible range of values given *no a priori* information on the most appropriate value for weights. Confidence intervals are calculated from these distributions. The overall index has been calculated directly from lowest-level indicators, rather than as the averages of four main categories (as has been done for the case of equal weighting). Further details on the techniques are discussed, for instance, in Sutherland *et al.* (2005).

Table 1. Transparency index for 11 OECD central banks from 1999 to 2009
(Scores are shown as multiplied by 100)

(1) Overall transparency

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | Changes from 99 to 09 |
|-------------|----|----|----|----|----|----|----|----|----|----|----|-----------------------|
| Fed | 45 | 45 | 45 | 52 | 52 | 52 | 58 | 58 | 58 | 64 | 67 | 22 |
| ECB | 47 | 57 | 62 | 62 | 62 | 64 | 64 | 64 | 64 | 64 | 64 | 17 |
| BoJ | 36 | 52 | 57 | 57 | 61 | 61 | 62 | 64 | 68 | 73 | 73 | 36 |
| BoE | 81 | 81 | 81 | 81 | 81 | 83 | 83 | 83 | 83 | 83 | 83 | 2 |
| BoC | 46 | 59 | 59 | 62 | 67 | 69 | 70 | 71 | 71 | 71 | 74 | 28 |
| Riksbank | 76 | 79 | 79 | 85 | 87 | 89 | 90 | 89 | 95 | 96 | 98 | 22 |
| SNB | 49 | 50 | 50 | 50 | 49 | 53 | 55 | 55 | 55 | 55 | 55 | 6 |
| Norges Bank | 45 | 44 | 52 | 65 | 65 | 67 | 74 | 74 | 74 | 74 | 74 | 29 |
| RBA | 41 | 41 | 41 | 41 | 41 | 41 | 44 | 44 | 69 | 72 | 72 | 31 |
| RBNZ | 80 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 9 |
| BoK | 53 | 53 | 53 | 60 | 66 | 67 | 77 | 76 | 76 | 79 | 70 | 17 |
| Average | 55 | 59 | 61 | 64 | 66 | 67 | 70 | 70 | 73 | 74 | 74 | 20 |
| Maximum | 81 | 89 | 89 | 89 | 89 | 89 | 90 | 89 | 95 | 96 | 98 | 17 |
| Minimum | 36 | 41 | 41 | 41 | 41 | 41 | 44 | 44 | 55 | 55 | 55 | 19 |

(2) By aspect**I. Policy objective**

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | Changes from 99 to 09 |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------------|
| Fed | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 25 | 33 | 17 |
| ECB | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 0 |
| BoJ | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 50 | 50 | 50 | 50 | 17 |
| BoE | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 |
| BoC | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 |
| Riksbank | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 |
| SNB | 50 | 50 | 50 | 50 | 50 | 67 | 67 | 67 | 67 | 67 | 67 | 17 |
| Norges Bank | 33 | 33 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 33 |
| RBA | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 0 |
| RBNZ | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 |
| BoK | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 |
| Average | 73 | 73 | 76 | 76 | 76 | 77 | 77 | 79 | 79 | 80 | 80 | 8 |
| Maximum | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 |
| Minimum | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 25 | 33 | 17 |

II. Policy decision

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | Changes from 99 to 09 |
|-------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------------|
| Fed | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 0 |
| ECB | 70 | 70 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 10 |
| BoJ | 70 | 70 | 85 | 85 | 95 | 95 | 95 | 85 | 85 | 90 | 90 | 20 |
| BoE | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 0 |
| BoC | 40 | 80 | 80 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 95 | 55 |
| Riksbank | 75 | 85 | 85 | 85 | 85 | 90 | 90 | 90 | 100 | 100 | 100 | 25 |
| SNB | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 0 |
| Norges Bank | 80 | 70 | 70 | 90 | 90 | 90 | 100 | 100 | 100 | 100 | 100 | 20 |
| RBA | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 90 | 90 | 90 | 50 |
| RBNZ | 90 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 10 |
| BoK | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 90 | 90 | 10 |
| Average | 70 | 75 | 77 | 80 | 81 | 81 | 82 | 81 | 87 | 88 | 89 | 18 |
| Maximum | 90 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 10 |
| Minimum | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 60 | 60 | 60 | 20 |

Table 1. Transparency index for 11 OECD Central Banks from 1998 to 2008 (cont.)
(Scores are shown as multiplied by 100)

III. Economic Analysis

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | Changes from 99 to 09 |
|-------------|----|----|----|----|----|----|----|----|----|-----|-----|--------------------------|
| Fed | 50 | 50 | 50 | 50 | 50 | 50 | 52 | 52 | 52 | 66 | 70 | 20 |
| ECB | 0 | 43 | 43 | 43 | 43 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| BoJ | 0 | 48 | 50 | 50 | 50 | 50 | 53 | 53 | 53 | 67 | 67 | 67 |
| BoE | 89 | 89 | 89 | 89 | 89 | 98 | 98 | 98 | 98 | 98 | 98 | 9 |
| BoC | 27 | 32 | 32 | 32 | 53 | 59 | 66 | 68 | 68 | 68 | 77 | 50 |
| Riksbank | 72 | 72 | 72 | 72 | 81 | 81 | 85 | 83 | 98 | 100 | 100 | 28 |
| SNB | 51 | 53 | 53 | 53 | 50 | 50 | 57 | 57 | 57 | 57 | 57 | 6 |
| Norges Bank | 66 | 73 | 70 | 70 | 70 | 80 | 95 | 95 | 95 | 95 | 95 | 30 |
| RBA | 24 | 24 | 24 | 24 | 25 | 25 | 34 | 34 | 52 | 66 | 66 | 42 |
| RBNZ | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 0 |
| BoK | 0 | 0 | 0 | 27 | 52 | 53 | 77 | 75 | 75 | 75 | 41 | 41 |
| Average | 42 | 51 | 51 | 54 | 58 | 61 | 68 | 68 | 71 | 75 | 73 | 31 |
| Maximum | 89 | 89 | 89 | 89 | 89 | 98 | 98 | 98 | 98 | 100 | 100 | 11 |
| Minimum | 0 | 0 | 0 | 24 | 25 | 25 | 34 | 34 | 50 | 50 | 41 | 41 |

IV. Decision-making process

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | Changes from 99 to 09 |
|-------------|----|----|----|----|----|----|----|----|----|----|----|--------------------------|
| Fed | 25 | 25 | 25 | 50 | 50 | 50 | 75 | 75 | 75 | 75 | 75 | 50 |
| ECB | 33 | 33 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 8 |
| BoJ | 42 | 58 | 58 | 58 | 67 | 67 | 67 | 67 | 83 | 83 | 83 | 42 |
| BoE | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 0 |
| BoC | 17 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 8 |
| Riksbank | 58 | 58 | 58 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 92 | 33 |
| SNB | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 0 |
| Norges Bank | 0 | 0 | 0 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| RBA | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 50 | 50 | 50 | 33 |
| RBNZ | 50 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 25 |
| BoK | 33 | 33 | 33 | 33 | 33 | 33 | 50 | 50 | 50 | 50 | 50 | 17 |
| Average | 33 | 38 | 39 | 46 | 47 | 47 | 51 | 51 | 55 | 55 | 56 | 23 |
| Maximum | 75 | 75 | 75 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 92 | 17 |
| Minimum | 0 | 0 | 0 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 |

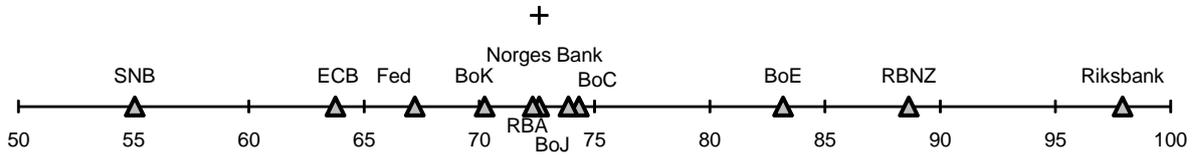
Notes:

Figures refer to values at the end of the year (except in 2009 where values at the end of the second quarter are presented).

Figure 1. Relative positions of central banks as of 2009
(Scores are shown as multiplied by 100)

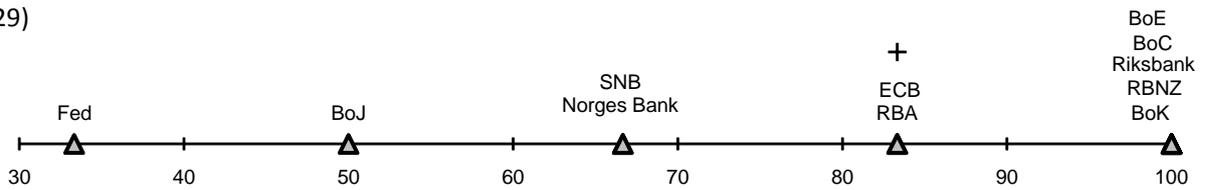
Overall transparency

(0.16)



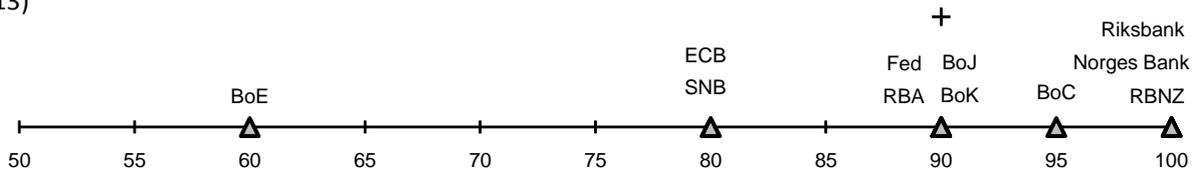
I Transparency about policy objective

(0.29)



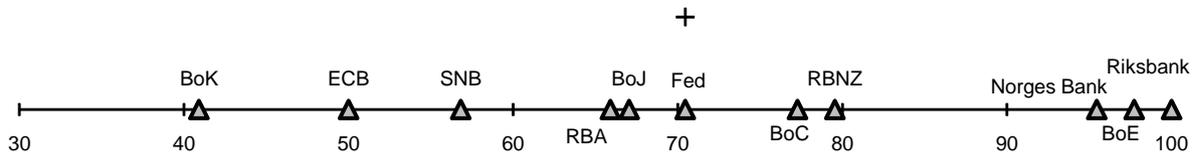
II Transparency about policy decision

(0.13)



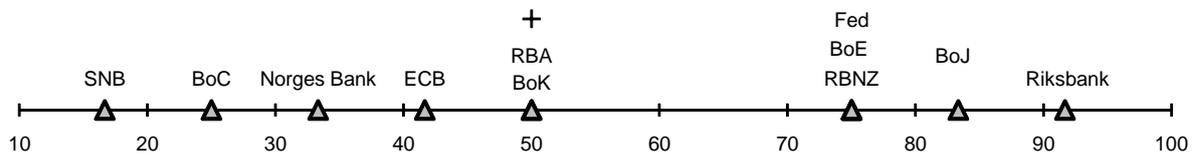
III Transparency about economic analysis

(0.27)



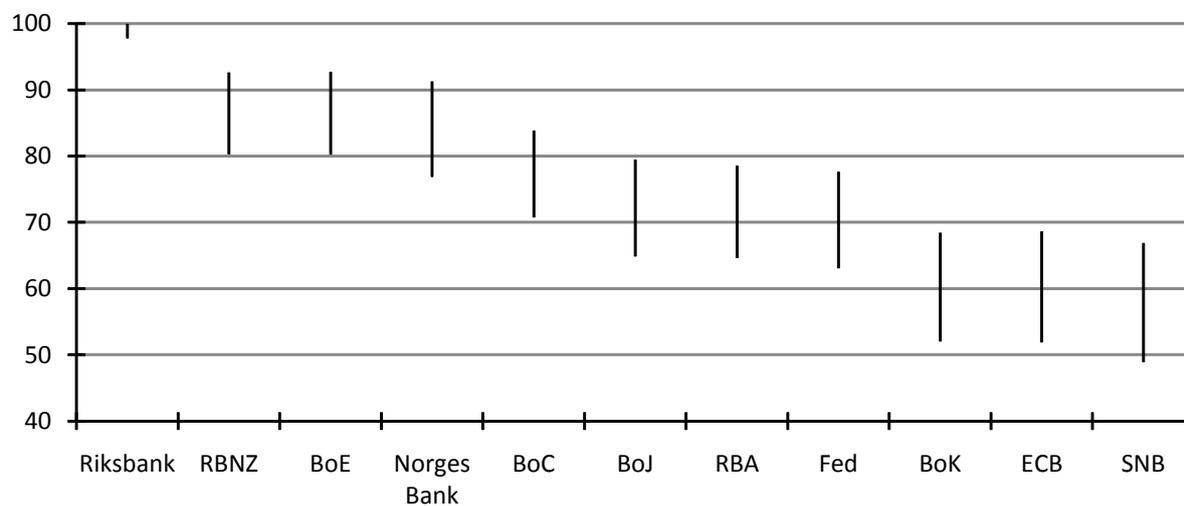
IV Transparency about decision-making process

(0.45)



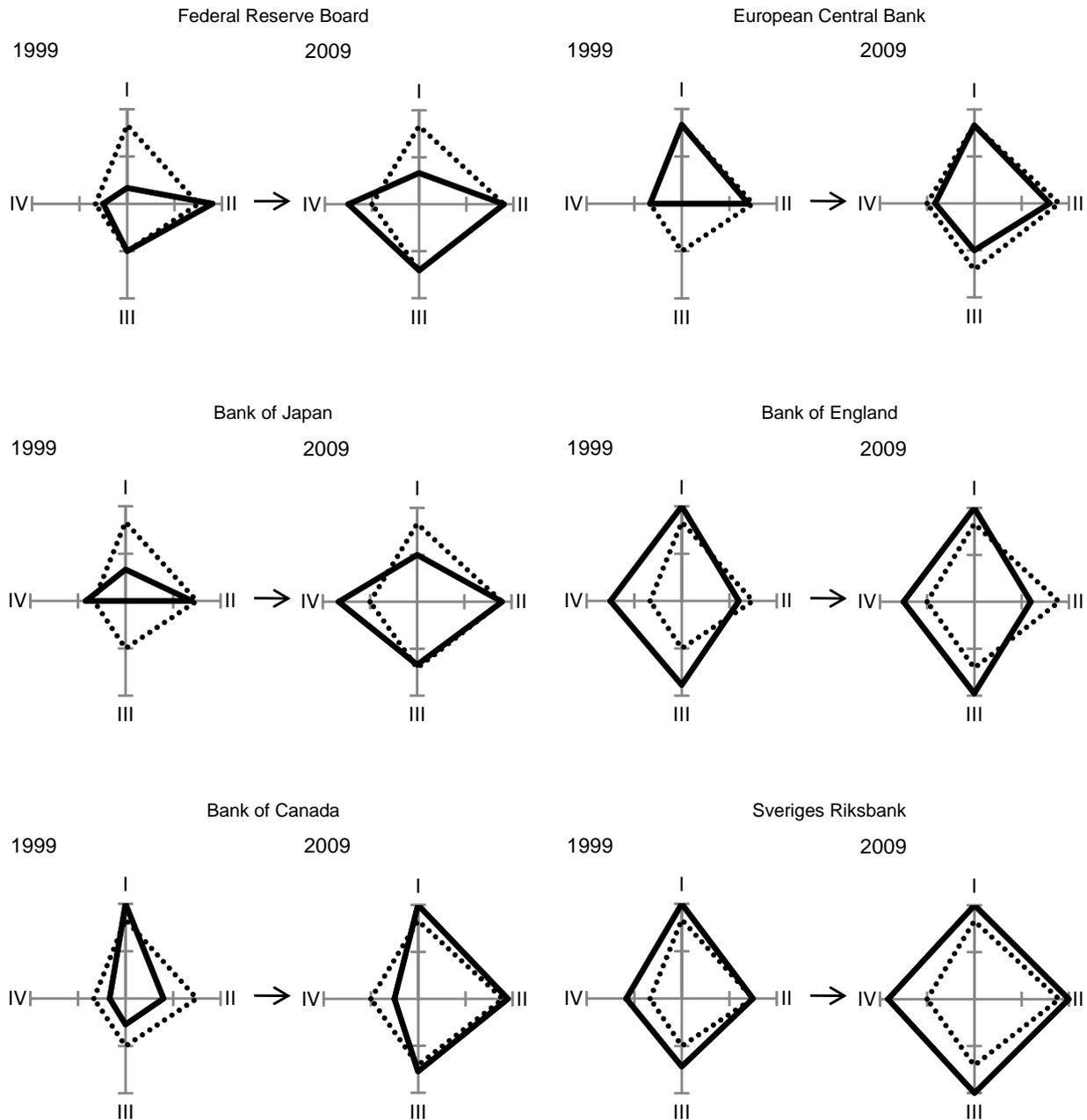
Note: 1. + signs indicate median values.
2. Numbers in parenthesis indicate coefficients of variation.

Figure 2. Confidence interval of the overall index as of 2009, at the 90% level
(Scores are shown as multiplied by 100)



Note: The lines indicate confidence interval at the 90% level obtained from random weighting.

Figure 3. Central bank transparency by aspect in 1999 and 2009



Note: Dotted lines indicate median values.
 I. Transparency about policy objective.
 II. Transparency about policy decision.
 III. Transparency about economic analysis.
 IV. Transparency about decision-making process.

Figure 3. Central bank transparency by aspect in 1999 and 2009 (cont.)
 Swiss National Bank

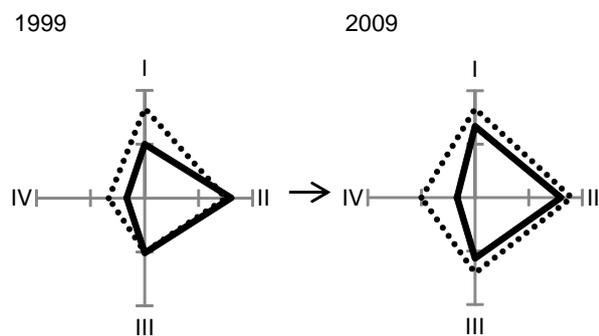
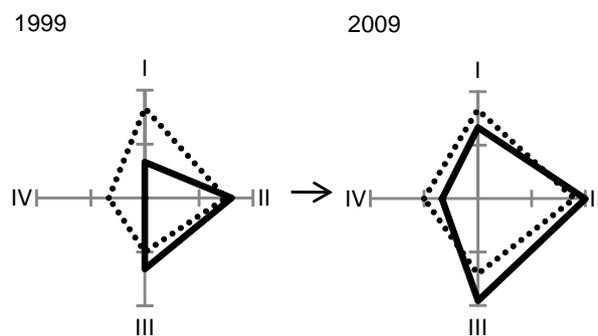
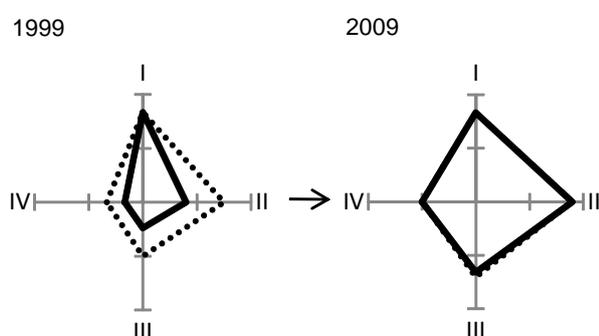


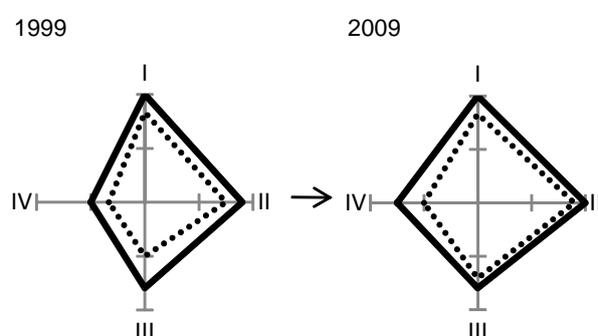
Figure 3. Central bank transparency by aspect in 1999 and 2009 (cont.)
 Norges Bank



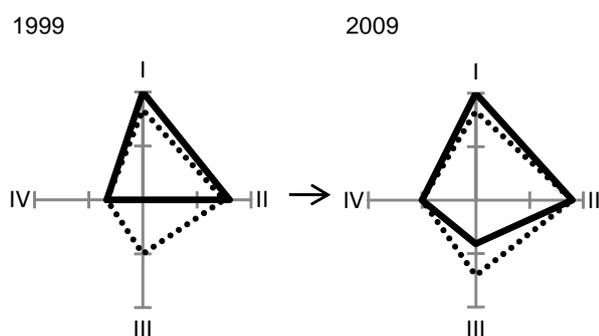
Reserve Bank of Australia



Reserve Bank of New Zealand



Bank of Korea



Note: Dotted lines indicate median values.

- I. Transparency about policy objective.
- II. Transparency about policy decision.
- III. Transparency about economic analysis.
- IV. Transparency about decision-making process.

Why does transparency matter?

22. A number of existing studies and surveys have provided arguments and evidence on the potential impact of central bank transparency, both with respect to its political and economic benefits. Although the academic literature has not necessarily reached a clear consensus on this issue, Blinder *et al.* (2008), Edey and Stone (2004) and Carpenter (2004), among others, provide comprehensive surveys on the topic of communication and transparency. The following paragraphs briefly summarise some of the advocated merits and demerits of increased transparency.

23. On the political front, transparency is an indispensable attribute of central banks accountability (Ortiz, 2009), especially where central banks are independent and monetary policy implementation is not subject to democratic scrutiny by the legislature. Correcting this “democratic deficit” is important for securing public support for policy actions which may entail short-run costs for longer-run gain. The initial shift toward increased transparency appears to have often been motivated by this accountability consideration. The fact that central bank independence, accountability and transparency are complements reflects the lessons of 1970s and 1980s, when more opaque central banks failed to prevent stagflation.

24. At the same time, transparency is beneficial on purely economic grounds, which may help explain why the actual communication practices of central banks go well beyond what formal arrangements stipulate. While significantly greater involvement of governments or legislatures has been observed in the setting of policy objectives, central banks have generally acted on their own initiative when choosing the communication practices that they perceive to be appropriate. The existing literature points to the following two, possibly inter-related, economic benefits.³¹

- First, increased transparency makes monetary policy more credible, which in turn should lead to inflation expectations of private sector agents being better anchored. Under a highly transparent regime, where the public has a reasonable access to the information necessary to assess monetary policy actions, central banks care about their reputation and are constrained from engaging in policy action that is time-inconsistent. In particular, central banks cannot pursue overly inflationary policy aimed at short-term output gains, because they would be penalised by higher inflation expectations. Transparency may thus be considered as one mechanism to institutionalise low inflation policies (Carpenter, 2004).
- Second, greater transparency helps to reduce market volatility and make monetary policy predictable. In contrast to the once conventional view that monetary policy was most effective when markets were “surprised”, theoretical and empirical studies in recent years emphasise the importance of anchoring both real and nominal interest rate expectations at a longer-term horizon. Where information held by central banks is not communicated, the public will be forced to infer it indirectly through the actions of central banks, which inevitably involves some errors. Higher transparency helps in reducing the asymmetry of information between central banks and private sector agents, acting to enhance the understanding of the rationale behind monetary policy action.

25. However, transparency is no panacea and has potential drawbacks which may affect choices about the particular form of communication practices which are adopted.

31. Blinder *et al.* (2008) defines the first benefit as the effect of “creating news” and the second element as that of “reducing noises”.

- Firstly, however carefully central banks may craft their messages, there is always some risk of misinterpretation. In particular, central bank views may be conditional on the currently available set of information and that conditionality may not be easy to communicate. Stated views can easily be mistaken for commitments.
- Secondly, greater transparency may make the decision-making process over-complicated and may change the behaviour of monetary-policy decision-makers in ways that negatively affect efficient formation of policy. For instance, the publication of the expected future path of policy rates may add to the complexity of decision-making, as what must be agreed upon at each meeting would not be just the current policy rate, but rather, a path of future policy rates. Also, the fact that minutes and/or voting records are eventually published may affect voting patterns.³² Too much transparency might thus, at least potentially, reduce the flexibility that is required of monetary policy.³³
- Thirdly, greater transparency may crowd out private information, which may be detrimental for the efficient functioning of the economy. To the extent that the public may pay too much attention to information made available from central banks (such as subtle differences in wording of their statements), there is a risk that market volatility will increase.
- Lastly, there may be extreme occasions when greater transparency could undermine the credibility of the central bank if it reveals policy mistakes that would otherwise have remained hidden.

What are the consequences of transparency?

26. While a wide body of literature has led to a broad consensus that higher transparency makes monetary policy decisions more predictable and reduces volatility in financial markets (see Blinder *et al.*, 2008 for a recent survey), less is known about the link between transparency and economic performance. The relatively limited number of studies that have tried to link the degree of transparency to economic performance has generally found a positive impact. In an investigation of about 20 countries over the 1990s, Cecchetti and Krause (2002) found that higher transparency leads to welfare improvement in the form of more stable inflation and output. Using a wider sample (of 80 countries) covering the second half of the 1990s, Chortareas, Stasavage and Sterne (2002) also found that higher transparency is associated with lower levels of inflation. Using data up to 2006 for 100 countries, Dincer and Eichengreen (2007 and 2009) similarly conclude that greater transparency reduces inflation variability.

27. These empirical studies employ a quantification of transparency which differs from one study to another. Cecchetti and Krause (2002) and Chortareas *et al.* (2002) focus narrowly on the publication of economic projections, while Dincer and Eichengreen (2009) use broader measures of transparency in line with the ones proposed by Eijffinger and Geraats (2006).³⁴ The present study takes advantage of the specificities of the transparency index presented in the previous section. First, the index covers overall communication practices in a typical decision-making process, not just one particular aspect (such as the publication of economic projections). Second, as it covers the time period from 1999 to the time of writing,

32. For instance, a voting member who faces a possible reappointment process may have an incentive to vote for actions that would be preferred by appointers.

33. For instance, Mishkin (2004) argues that publishing the objective function or projections of the future path of policy interest rates may complicate the communication process and threaten public support for the central bank's long-run objectives.

34. See footnote 3 for aspects of transparency covered by the Eijffinger and Geraats index.

it incorporates the considerable changes in communication practices that have taken place in recent years. Third, the index is available for every year from 1999. One limitation is that it is available only for 11 central banks. This, however, has a merit of dealing with countries that are relatively homogenous in nature, which makes the need to control for institutional factors such as the rule of law or for differences in per capita income less compelling.³⁵

Empirical investigation of the possible effects of transparency

28. The empirical analysis of the economic effects of transparency is centred on the hypothesis that transparency influences economic performance by contributing to a better anchoring of inflation expectations. In the following section, this hypothesis is tested in two different simple ways. The first regression explores the extent to which inflation expectations are influenced by current inflation. Secondly, the stability of inflation in the face of business cycle fluctuations is examined in a cross-country Phillips curve setting. In each case, the estimation is based on pooled data from 1999 to 2008 for the 11 economies for which the transparency index is available.³⁶ The overall index is the preferred measure of transparency in the empirical analysis, because it encapsulates all the dimensions of transparency which have been discussed above. Nonetheless, the effects of each of the four main components have been tested separately to assess if particular aspects of transparency appear to play a more or less important role.

Transparency and the anchoring of inflation expectations

29. The rationale behind the first regression is that, if greater transparency successfully anchors inflation expectations, they should exhibit a lower responsiveness to changes in actual inflation. To investigate this point, a simple equation (1) has been estimated on annual data from 1999 to 2008.³⁷

$$E[\pi_{i,t+24}] = \alpha_{1,i} + (\alpha_2 + \alpha_3 \times \text{transparency}_{i,t})\pi_{i,t} + \alpha_4 \times E[\text{Unr}_{i,t+24}] + \varepsilon_i \quad (1)$$

where:

$E[\pi_{i,t+24}]$ = 2 year-ahead projection of the personal consumption expenditure deflator from the autumn *OECD Economic Outlook*. The choice of this measure of inflation expectations has been largely influenced by a lack of alternatives in terms of data availability.³⁸

$\text{transparency}_{i,t}$ = transparency index as of the beginning of the year (the overall index or each of the four sub-indices)

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35. For instance, according to the Worldwide Governance Indicators (WGI) published under the auspice of the World Bank, the indicator for the rule of law component for all countries shows a mean of 50 (out of the full score of 100) with standard deviation of nearly 30. Confining to countries in our sample, the mean goes up to 90, while standard deviation is reduced to about 10.
36. Each equation has been estimated as pooled estimated generalised least squares (EGLS) with fixed effect in the possible presence of cross-section heteroskedasticity, also allowing for different variances across countries and across time for each country using White's (1980) diagonal method.
37. The analysis is based on personal consumption expenditure deflators because CPI projections are not available in earlier years.
38. The option of using private sector projections (such as Consensus Economic projections) was not available, as the authors did not have full access to the historical data covering all countries in the sample. In any case, however, unlike autumn issues of *Economic Outlook*, Consensus Economic projections do not usually include two-year-ahead projections. While attractive in principle for this analysis, bond-implied inflation expectations could not be used because their coverage is too limited in both time and space.

$\pi_{i,t}$ = actual year-on-year inflation rate prevailing at the time of the projection.³⁹

$E[Unr_{i,t+24}]$ = 2 year-ahead projection of the unemployment rates from the autumn *OECD Economic Outlook*.⁴⁰

30. Table 2 summarises the results.⁴¹ The preferred specification case using the overall index shows that the main coefficient of interest α_3 , the interaction term of transparency and actual inflation, is negative and statistically significant at the 1% level. This indicates that, where central banks are generally more transparent, expected inflation is less sensitive to changes in inflation outcomes. Regressions using each of the main four components of the overall index suggest that transparency about the policy objective and the policy decision may be particularly important: when this sub-index is used, the results are strikingly similar in both significance and size of the effect to the preferred specification.

Table 2. Effects of transparency on inflation expectations

| | | Overall transparency index | Index on policy objective | Index on policy decision | Index on economic analysis | Index on decision-making process |
|------------|---|----------------------------|---------------------------|--------------------------|----------------------------|----------------------------------|
| α_2 | Actual inflation | 0.21 ** (0.05) | 0.21 ** (0.04) | 0.33 *** (0.00) | 0.00 (0.97) | 0.01 (0.77) |
| α_3 | Transparency x actual inflation | -0.37 ** (0.01) | -0.30 *** (0.01) | -0.45 *** (0.00) | -0.06 (0.56) | -0.11 (0.21) |
| α_4 | Unemployment rate projection in 2 years | -0.21 *** (0.00) | -0.22 *** (0.00) | -0.21 *** (0.00) | -0.21 *** (0.00) | -0.21 *** (0.00) |
| | Adj.R ² | 0.80 | 0.83 | 0.82 | 0.80 | 0.81 |
| | D.W. | 1.30 | 1.21 | 1.46 | 1.29 | 1.27 |
| | Obs. | 110 | | | | |

Note: 1. Numbers in parentheses indicate p -values corrected for heteroskedasticity.
2. *** Statistically significant at 1%, ** at 5% and * at 10% levels, respectively.

39. In practice, year-on-year inflation in the second quarter of the year is used.

40. Unemployment rates have been used to represent cyclical position, as output gap projections are not available for Korea in early years. The results are robust to omitting this variable.

41. Equation (1) has been estimated in inflation levels with fixed-effect panel because the data are stationary in the sample and current inflation is exogenous with respect to two-year ahead expectations. The panel tests for individual unit roots proposed by Im, Pesaran and Shin (2003), Maddala and Wu (1999) and Choi (2001) all strongly suggest that, in the sample under consideration, inflation expectations and outcomes are stationary. A Durbin-Wu-Hausman test strongly rejects the hypothesis that the estimated coefficients in Equation (1) might be biased due to the possible endogeneity of current inflation $\pi_{i,t}$ with respect to two-year ahead expectations $E[\pi_{i,t+24}]$. The Durbin-Wu-Hausman test has been carried out following the auxiliary regression procedure proposed by Davidson and MacKinnon (1989) using lagged inflation as an instrument.

Transparency and the Phillips curve

31. Typical Phillips curves have been estimated to investigate the short-run trade-off between inflation and output. The focus here is on the impact of transparency on the credibility of monetary policy objectives. In an environment where policy objectives are credible and inflation expectations are well-anchored as a result, price-setters will put more weight on expected inflation or inflation targets, thereby reducing the sensitivity of inflation to fluctuations in the output gap (IMF, 2006, Bayoumi and Sgherri, 2004).⁴²

32. Phillips curves are estimated as specified in (2).⁴³ In this specification, transparency enters the equation in two separate terms. First, an interaction term with output gap tries to examine if higher transparency reduces the role of cyclical fluctuations in inflation dynamics, thereby flattening the curve. Additionally, another interaction term with quantified price stability objective (either explicit or implicit target) has been included to check if greater transparency strengthens the role of the target in the inflation process.

$$\begin{aligned} \pi_{i,t} = & \alpha_{1,i} + \alpha_{2,i} \cdot \pi_{i,t-1} + \alpha_{3,i} \cdot oil_{i,t} + (\alpha_4 + \alpha_5 \times transparency_{i,t}) \times gap_{i,t} \\ & + \alpha_6 \times transparency_{i,t} \times objective_{i,t} + \varepsilon_t \end{aligned} \quad (2)$$

where:

$\pi_{i,t}$ = annual inflation measured as year-on-year % changes in headline CPI.

$oil_{i,t}$ = crude oil prices (Brent spot prices) in national currency terms, year-on-year % changes.

$transparency_{i,t}$ = transparency index as of the beginning of the year (the overall index or each of the four sub-indices).

$gap_{i,t}$ = output gap, per cent of potential GDP *OECD Economic Outlook 85* database.

$objective_{i,t}$ = quantified price stability objective.⁴⁴

33. The results of the preferred specification based on the overall index indicates that higher transparency is associated both with flatter Phillips curves and with the strengthened role of price stability objective (Table 3). The coefficient on the term measuring the interaction of transparency with the output gap (α_5) are negative and strongly statistically significant. That on the interaction term of transparency and the price stability target (α_6) is positive and statistically significant at 10% levels. Estimations that rely on sub-indices suggest that transparency on the policy decision has a particularly important role: it is associated with a flatter curve and a stronger effect of the price stability target, with estimated coefficients

42. IMF (2006) also argues that globalisation is an important factor that has made inflation less sensitive to domestic output.

43. On the estimation of Phillips curves without forward-looking terms, see for instance Fair (2008).

44. For inflation-targeting central banks (BoE, BoC, Riksbank, Norges Bank, RBA, RBNZ and BoK), the official target (or the mid-point of the target range) has been used. For other central banks, the following price stability objectives in quantified terms have been assumed based on the authors' interpretation of the information on quantified price stability objective made available from each central bank: the Fed at 1.9%, ECB at 1% until 2002 and 1.9% from 2003 onward, and the BoJ and SNB at 1%. For similar assumptions, please see Ahrend *et al.* (2008). The objective itself not interacted with transparency index does not enter the regression because it is stable over time in most countries so that the fixed effects captures its impact.

which are very close to the ones in the specification with the overall transparency index. Transparency on economic analysis is found to be linked to a flatter Phillips curve, but not to a stronger role of the price stability target. Taken together, these results at the disaggregated level suggest that the transparency on the *future* actions of central banks has particularly important macroeconomic effects.

Table 3. Phillips Curve estimation incorporating effects of transparency

| | | Overall transparency index | Index on policy objective | Index on policy decision | Index on economic analysis | Index on decision-making process |
|------------|--|----------------------------|---------------------------|--------------------------|----------------------------|----------------------------------|
| α_4 | Output gap | 0.72 ** (0.01) | 0.22 (0.14) | 0.94 ** (0.03) | 0.33 *** (0.01) | 0.25 (0.12) |
| α_5 | Transparency x output gap | -1.06 ** (0.02) | -0.20 (0.35) | -1.04 ** (0.05) | -0.50 ** (0.03) | -0.38 (0.20) |
| α_6 | Transparency x price stability objective | 0.69 * (0.08) | 0.49 (0.27) | 0.69 ** (0.04) | 0.18 (0.47) | 0.43 (0.27) |
| | Adj.R ² | 0.71 | 0.71 | 0.70 | 0.71 | 0.68 |
| | Obs. | 110 | | | | |

Note: 1. Numbers in parentheses indicate *p*-values corrected for heteroskedasticity.
2. *** Statistically significant at 1%, ** at 5% and * at 10% levels, respectively.

34. One important caveat here, which also applies to the previous regression, is that the pure effect of transparency cannot be separated from other aspects of the monetary policy framework with which it is nearly always associated, such as central bank credibility, which will be linked to policy performance. Furthermore, better-anchored expectations and greater transparency may be jointly driven by other factors, such as a greater commitment to price stability or enhanced credibility in the conduct of monetary policy. The empirical evidence thus does not allow a firm conclusion to be drawn that transparency causes the Phillips curve to be flatter. However, it documents that the Phillips curve is significantly flatter where transparency is greater, which suggest that more transparent communication practices are typically a part of monetary policy frameworks that deliver more stable inflation in the face of output fluctuations. It is also consistent with the view that the role of quantified price stability objective is stronger in a situation of greater transparency.

Further progress toward transparency could help to deal with current challenges

35. As evidenced by the index assembled for this study and its subcomponents, communication practices have converged significantly across the economies considered, in the direction of greater transparency. The empirical evidence examined above suggests that higher transparency can deliver better anchored inflation expectations and more stable inflation outcomes. This is consistent with the view that the essence of monetary policy has largely become the art of managing expectations (Woodford, 2001). Nonetheless, the movement towards greater openness has been more limited in two areas where monetary frameworks still exhibit considerable cross-country divergence: transparency about the decision-making process and communication regarding future policy inclination.⁴⁵ These two aspects of transparency appear

45. Geraats (2008) similarly points out that these two areas constitute the main remaining communication challenges for central banks.

to be of particular importance in the current environment, which has proven to be challenging for communication practices of central banks (Box 1).

Box 1. Current crisis and communication practices of central banks

As central banks across the OECD areas responded to the crisis that erupted in the summer of 2007, their communication practices have also evolved. The developments since the intensification of the crisis in the autumn of 2008 are of particular interest, as changes made in this period can be directly interpreted as the effort on the part of central banks to make effective use of communication in order to deal with a number of new challenges. These challenges include, among others, the emergence of deflation risk, the fact that lower bound of nominal interest rates has been effectively reached, as well as heightened uncertainty about the economic outlook.

First, as economic conditions rapidly and significantly deteriorated, a risk of deflation emerged. The risk may be greatly reduced if medium-term inflation expectations of economic agents remain well-anchored even through a protracted period of low or even negative inflation. The decision by the Fed to provide explicit quantified information on its policy objective through its “longer-term” projections can be useful in this regard. The Fed is the only central bank in the sample that had not provided, prior to the crisis, any quantification on its policy objective.¹

Second, even when central banks have slashed policy rates to a point where the zero-lower bound of overnight interest rates is effectively binding, central banks can still affect market interest rates over medium horizon through expectations of the future policy path, for instance, by making it explicit that near zero interest rates will be kept for a substantial period of time. While the most effective tool for this purpose is the publication of interest rate path, other central banks still try to achieve this through verbal guidance. What is particular about the new practice of the BoC since April 2009 is that it has started to give more explicit time horizon over which the verbal guidance is applicable. More generally speaking about information that could signal future policy stances, the Riksbank’s decision in April 2009 to make voting records available immediately after the policy meeting may be useful, particularly because a dissenting opinion was also explicitly reported in the statement.

Lastly, the crisis made the assessment of the economic conjuncture and economic outlook extremely difficult. To account for increased uncertainty, the BoC started to publish fan charts for its inflation projections. On the other hand, perhaps reflecting an exceptional degree of uncertainty,² the BoK stopped publishing economic projections in the Monetary Policy Report endorsed by the decision-makers.²

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1. The Fed first expanded its projections to three year horizon in 2008, which made it possible to infer the rate of inflation which the Fed deems consistent with its objective. The quantitative guidance has been reinforced with the publication of “longer-run” projections since 2009.
 2. The BoK has also stopped publishing fan charts for inflation and output projections. To partly compensate for this, staff projections now come with an extended projection horizon (from up to one year to up to two years) and are published slightly more frequently (from semi-annual to three times a year with an update).

36. First, *transparency about how decisions are made* is crucial for private sector confidence in a period when central banks have taken innovative, extraordinary and often aggressive steps to intervene in financial markets. The rationale behind these decisions warrant careful explanation with views on the expected policy effects and the associated surrounding uncertainty. In addition, to the extent that recent measures have resulted in a rapid expansion of central bank balance sheets, another important dimension of transparency is information about how the quality of central bank assets is evolving, whether there is lending to the government, and how the monetary authority intends to normalise its balance sheet in the future so as to prevent future inflationary pressures.⁴⁶ Publication of minutes is well-suited for those

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46. Compositions of the central bank balance sheets are published quite frequently, most typically on a weekly basis. The degree to which central banks are allowed to finance budget deficits differs across central banks: purchase of government bonds in primary markets is usually prohibited, however.

purposes, as they serve as a centralised forum where different policy alternatives can be discussed in a well-organised manner. This is particularly crucial when central banks are venturing into an uncharted territory, where clear-cut consensus as to the appropriate policy action is most likely a rare exception.⁴⁷ Indeed, more generally, the increase in transparency regarding the publication of minutes, witnessed for many central banks over the past year, is congruent with this point.

37. Second, in an environment where financial dislocation restricts the smooth functioning of conventional transmission channels and room for further interest rate cuts has been more or less exhausted, a key question is whether, and to what extent, monetary authorities should try to use *communication about future policy* as a substitute.

- In the face of exceptional uncertainty about the functioning of transmission channels and the distribution of risks, one option is to remain deliberately silent. The aim here would be to protect credibility by avoiding the risk of communicating plans that cannot be implemented (because transmission turns out to be broken) or conversely have to be reversed (because downside risks are revealed to be less threatening than previously anticipated). This option, however, would entail a reversal of the trend towards increased transparency which could itself have a negative impact on credibility.
- Another option is to use communication policy to convince market participants that central banks will keep policy accommodating for a protracted period, more or less unconditionally, without necessarily specifying the timeline. The benefit of this approach is that it can shape the yield curve beyond the short- to medium-term maturities influenced by conventional interest rate policy. This line of action has been followed earlier this decade by the Federal Reserve with its repeated statements that, it would keep an accommodative policy stance for a “considerable” period of time, and then it would remove accommodation only at a “measured pace” (Thornton, 2006).⁴⁸ The Fed has been following this approach again since December 2008. While committing future policy in a nearly unconditional manner can have powerful effects on policy rate expectations and the yield curve, this approach presents the drawback that, if circumstances change, reversing it can be costly in terms of credibility and risk impeding necessary adjustments in stance.
- The third option is not only to provide commitment to keep the policy rate low but also to be more specific about the duration, notably by making the commitment strictly conditional on the development of the economy. For instance, the Bank of Japan implemented quantitative easing policy from March 2001 through March 2006, when the Bank made an explicit commitment to maintain the policy stance until the year-on-year CPI inflation would turn positive.⁴⁹ Since April 2009, the Bank of Canada has committed to hold current policy rate until the end of the second quarter of 2010, but this commitment has been made strictly conditional on the inflation outlook. In both cases, the expected duration of the current policy stance hinges on economic outlook as assessed and communicated by the central banks. Thus, a natural extension of this approach is for monetary authorities to publish explicit interest rate paths that are explicitly contingent on their

47. Even where the minutes are not made available, decision-makers can still convey their views through other media, such as speeches. This approach, however, suffers from a significant drawback: it can be potentially detrimental if too many conflicting voices are heard.

48. There is evidence that the introduction of the coded words since mid-2003 in the policy statement result in improved precision of the fed funds futures in forecasting future fed funds rates (Kwan, 2007).

49. Existing empirical studies indicate that this commitment had the effect of lowering the yield curve, especially on the short to medium term (Ugai, 2007, Oda and Ueda, 2005).

economic projections and a distribution of risks.⁵⁰ Among others, Rudebusch and Williams (2008) and Woodford (2008) highlight that such interest rate paths offer the benefit of influencing the yield curve at longer maturities while enabling central banks to adjust their policy path projection in response to economic events without compromising their credibility. In this strategy, the key challenge for communication policy is to ensure that the public correctly understands the conditional nature of the policy path. In other words, the public must recognise that if circumstances turn out to differ from past projections, the policy path will have to move accordingly. The experience of Sweden and Norway suggests that the risk of potential misunderstanding by the public is manageable (Svensson 2008).⁵¹ While the conditional nature of the policy path helps to preserve central bank credibility, it comes at the cost of having a weaker effect on the yield curve than unconditional strategies (because markets will price in the probability that the policy path may deviate from the projection as a result of economic developments).

38. In an environment where substantial macro-economic stimulation is required but where monetary policy is constrained by the zero lower bound and impaired conventional transmission channels, the option of opaqueness, which amounts to refraining from using communication as a policy tool, does not appear to be attractive. At the other extreme, the option of near unconditional pre-commitment, explicit or through the use of code words, is risky in a situation characterised by an exceptional degree of uncertainty. The “middle-of-the-road” option of publishing a conditional path for future interest rates is more attractive in the current circumstances although not costless or a panacea. First, it comes at the risk of threatening the credibility if the public does not recognise the conditional nature of the path (Mishkin, 2004). Secondly, in an environment where financial intermediation seems to be partly dysfunctional, bringing down risk-free rates may have limited effects if not supplemented with efforts directly aimed at supporting the channelling of credit to sound borrowers.

50. This approach generally presupposes that central banks are explicit about risk distributions when presenting inflation and output projections. In contrast to the approach taken by the BoJ and BoC, the strength of publishing more formal future interest rate path is that it can also provide inclination concerning the pace of possible normalisation or tightening beyond the period where the current guidance is applicable.

51. While another frequent objection is that publishing interest rate projections may be difficult in countries where monetary policy is set by committee, the experience of Sweden and Norway has not substantiated this claim.

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Appendix

This Appendix shows in detail

- i) what aspects of communication practices have been investigated
- and
- ii) how each element has been scored to form an index.

Scores are reported for each central bank and for each year over the 1999 to 2009 period for the 22 detailed components listed in the following table.

| | | | |
|-----------------------------|------------------------|---|-------------------------------------|
| I. Policy objective | 1 | Policy objective(s) | |
| | 2 | Quantification | |
| | 3 | Time horizon | |
| II. Policy decision | 1-1 | Policy changes | Announcement |
| | 1-2 | | Explanation |
| | 2-1 | No policy changes | Announcement |
| | 2-2 | | Explanation |
| | 3 | Future policy guidance | |
| | III. Economic analysis | 1 | Frequency of projection publication |
| 2 | | Endorsement of the decision-making body | |
| 3-1 | | Inflation projection | Basic nature |
| 3-2 | | | Projection time horizon |
| 3-3 | | | Projection frequency |
| 3-4 | | | Uncertainty |
| 4-1 | | Output projection | Basic nature |
| 4-2 | | | Projection time horizon |
| 4-3 | | | Projection frequency |
| 4-4 | | | Uncertainty |
| 5 | | Underlying assumptions | |
| IV. Decision-making process | | 1 | Minutes |
| | 2 | Voting records | |
| | 3 | Public appearances | |

Note:

Scores for each year refer to the practices prevailing at the end of the year (except for in 2009, which refer to the end of the second quarter).

I. Policy objective

1. Policy objective(s)

Is the formal objective of monetary policy clearly specified (such as in central bank law or in a formal agreement with the government) ? If there are multiple objectives, do they come with a clear hierarchy?

| | |
|------|---|
| 1.00 | One unique objective or multiple objectives with clear hierarchy. |
| 0.75 | |
| 0.50 | |
| 0.25 | |
| 0.00 | |
| | Multiple objectives without prioritization. |
| | No clearly stated objective. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| ECB | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoJ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoE | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Riksbank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Norges Bank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBNZ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Notes:

| | |
|-------------|--|
| Fed | Federal Reserve Act stipulates multiple objectives without prioritisation: "To promote effectively the goals of maximum employment, stable prices and moderate long-term interest rates". |
| ECB | "The primary objective of the ESCB shall be to maintain price stability. Without prejudice to the objective of price stability, the ESCB shall support the general economic policies in the Community ..." (Treaty establishing the European Union). |
| BoJ | "Currency and monetary control by the Bank of Japan shall be aimed at achieving price stability, thereby contributing to the sound development of the national economy" (The Bank of Japan Act of 1998). |
| BoE | "In relation to monetary policy, the objectives of the Bank of England shall be (a) to maintain price stability, and (b) subject to that, to support the economic policy of Her Majesty's Government..." (Bank of England Act of 1998). |
| BoC | "the Government of Canada and the Bank of Canada today reaffirmed that monetary policy in Canada will continue to be oriented towards achieving and maintaining price stability" (joint statement of the Government of Canada and the Bank of Canada, 24 February 1998). |
| Riksbank | The revision of the Riksbank Act (effective as of Jan. 99) clarified the primary objective of the Riksbank's activities as maintaining price stability. |
| SNB | The Revised National Bank Act (in force since 1 May 2004) stipulates "price stability" as the goal. Before that, no single objective had been given. |
| Norges Bank | "Norges Bank's implementation of monetary policy shall ...be oriented towards low and stable inflation." (Regulation on Monetary Policy, 29 March 2001). Before that, monetary policy was geared toward maintaining a stable exchange rate against European currencies (Exchange Rate Regulation). |
| RBA | The first Statement on the Conduct of Monetary Policy, issued by the Treasurer and Reserve Bank Governor in August 1996 stipulates that RBA should focus on price stability. |
| RBNZ | "To the economic objective of achieving and maintaining stability in the general level of prices" (Reserve Bank Act 1989). |
| BoK | The Bank of Korea Act (effective April 1998) sets out price stability as the purpose of the Bank of Korea. |

I. Policy objective

2. Quantification

Is the objective communicated in a quantitative manner?

| | |
|------|--|
| 1.00 | A clear policy target or a lasting definition of the policy objective is given quantitatively. |
| 0.75 | |
| 0.50 | A limited degree of quantitative guidance exists. |
| 0.25 | Some information is made available to infer the objective quantitatively. |
| 0.00 | No quantification. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 | 0.50 |
| ECB | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoJ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 |
| BoE | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Riksbank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Norges Bank | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBNZ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Notes: The year in which inflation targeting is adopted is based on Fry *et al.* (2000)

| | |
|-------------|--|
| Fed | No quantification until the end of 2007. In 2008, the extension of projections to three years ahead based on the path of appropriate monetary policy can be interpreted as effectively revealing a range of inflation rates that it deems consistent with its objective of stable prices. In 2009, this point has been further reinforced with projections for "longer-run" inflation. |
| ECB | Definition of price stability is given as "below (but close to) 2%". This definition is set by the ECB. |
| BoJ | Since March 2006, the Bank's "Thinking on Price Stability" gives some quantitative guidance. This is revised annually, based on the view of the voting members, and it is not strictly speaking the policy target of the BoJ. |
| BoE | Inflation target since 1992. The target is decided by the government. |
| BoC | Inflation target since 1991. The target is set based on agreement between BoC and the government. |
| Riksbank | Inflation target since 1993. Riksbank chooses the target on its own initiative. |
| SNB | Since December 1999, the SNB has its own definition of price stability (CPI of less than 2%). |
| Norges Bank | Inflation target since 2001. The target is defined by the government. |
| RBA | Inflation target since 1993. The target is set based on agreement between RBA and the government. |
| RBNZ | Inflation target since 1988. The Reserve Bank Act requires that price stability be defined in Policy Targets Agreement between the Minister of Finance and the Reserve Bank. |
| BoK | Inflation target since 1998 (under IMF surveillance until 2000, monetary targeting co-existed). The target is set based on agreement between BoK and the government. |

I. Policy objective

3. Time horizon

Is the time horizon to achieve the policy objective specified in a clear manner?

| | |
|------|--|
| 1.00 | Yes, clearly specified. |
| 0.75 | |
| 0.50 | To some extent (over the cycle, in the medium run, etc). |
| 0.25 | |
| 0.00 | No indication of time horizon. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ECB | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| BoJ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BoE | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Riksbank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Norges Bank | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| RBA | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| RBNZ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Notes:

| | |
|-------------|---|
| Fed | No specific mention of time horizon. |
| ECB | "Monetary policy operates ... in order to maintain price stability for the euro area over the medium term." |
| BoJ | No specific mention of time horizon. |
| BoE | Inflation target must be met at all times. If more than 1% deviation from the target emerges, the Governor must specify, in an open letter, "the period within which you [the Governor] expect to return to the target". |
| BoC | Until 2001, the target applies for the duration of contract with the government. The Bank states that monetary policy needs to aim at [the midpoint of the target] over the six to eight quarters that are required for monetary policy to have most of its effect. |
| Riksbank | "The Riksbank tries to adjust the repo rate so that inflation is normally expected to be close to the inflation target of 2% within two years." |
| SNB | A definition of price stability for an extended period of time. The time horizon after an inflationary shock to return to the range of price stability is not determined in advance. |
| Norges Bank | "Over time". "The relevant horizon will depend on disturbances to which the economy is exposed and how they affect the path for inflation and the real economy ahead". |
| RBA | "In pursuing the goal of medium-term price stability, both the Reserve Bank and the Government agree on the objective of keeping consumer price inflation between 2 and 3 per cent, on average, over the cycle." |
| RBNZ | Inflation target is stipulated in Policy Targets Agreement with the government whose applicability is linked to the Governor's term in office. |
| BoK | Annual targeting regime from 1998 to 2003. Since 2004, the horizon for the target has been set as the average inflation for three years. |

II. Policy decision

1.1. Announcement of policy changes

 Is a decision to change policy stance announced without delay?

| | |
|------|--|
| 1.00 | Always announced without delay. |
| 0.75 | |
| 0.50 | Occasionally announced (when there is a concurrent release of another report, etc.). |
| 0.25 | |
| 0.00 | No immediate announcement. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| ECB | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoJ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoE | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Riksbank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Norges Bank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBNZ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Notes:

| | |
|-------------|--|
| Fed | Always announced without delay. |
| ECB | Always announced without delay. |
| BoJ | Always announced without delay. |
| BoE | Always announced without delay. |
| BoC | Always announced without delay. |
| Riksbank | Always announced without delay. |
| SNB | Always announced without delay. |
| Norges Bank | Always announced without delay. |
| RBA | Always announced without delay. |
| RBNZ | Always announced without delay since the adoption of the Official Cash Rate in March 1999. |
| BoK | Always announced without delay. |

II. Policy decision

1.2. Explanation of policy changes

Is the rationale behind the decision to change the policy stance explained when the decision is announced?

| | |
|------|--|
| 1.00 | Always explained (by press statement, press conference or a combination of both). |
| 0.75 | |
| 0.50 | Occasionally explained (when there is a concurrent release of another report, etc.). |
| 0.25 | |
| 0.00 | No immediate explanation. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| ECB | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoJ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoE | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Riksbank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Norges Bank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBNZ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Notes:

| | |
|-------------|---|
| Fed | Explanations are always given in a statement. The Beige book discusses assessment of current economic situation. |
| ECB | Policy changes are usually explained via a press conference by the President. The "Editorial" in the Monthly Bulletin discusses assessment of the current economic situation. |
| BoJ | Explanation is given in a statement supplemented by a press conference. Monthly report on economic and financial developments discusses assessment of current economic situation. |
| BoE | Always explained (very few exceptions in early years) through a statement. |
| BoC | Always explained in a statement. |
| Riksbank | Always explained in a statement, followed by a press conference. |
| SNB | Always explained in a statement |
| Norges Bank | Always explained in a statement (and at least from 2002 through a press conference). |
| RBA | Always explained in a statement. |
| RBNZ | Explanations are always given in a statement since the introduction of the Official Cash Rate in March 1999. |
| BoK | Explanations always given in a statement, followed by a press conference. |

II. Policy decision

2.1. Announcement of no policy changes

Is a decision to keep the previous policy unchanged announced without delay?

| | |
|------|--|
| 1.00 | Always announced without delay. |
| 0.75 | |
| 0.50 | Occasionally announced (when there is a concurrent release of another report, etc.). |
| 0.25 | |
| 0.00 | No immediate announcement. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| ECB | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoJ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoE | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Riksbank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Norges Bank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| RBNZ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Notes:

Fed Announced, de facto, since May 1999.

ECB Always announced without delay.

BoJ Always announced without delay.

BoE Always announced without delay.

BoC Announced since December 2000 with the introduction of a fixed-date schedule for monetary policy decisions.

Riksbank Always announced without delay.

SNB Always announced without delay.

Norges Bank Announced since October 1999 (formerly no announcement).

RBA Announced since December 2007 (formerly no announcement).

RBNZ Always announced without delay since the adoption of the Official Cash Rate in March 1999 (formerly no announcement).

BoK Always announced without delay.

II. Policy decision

2.2. Explanation of no policy changes

Is the rationale behind a decision to keep the policy unchanged explained when the decision is announced?

| | |
|------|--|
| 1.00 | Always explained (by press statement, press conference or a combination of both). |
| 0.75 | |
| 0.50 | Occasionally explained (when there is a concurrent release of another report, etc.). |
| 0.25 | |
| 0.00 | No immediate explanation. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| ECB | 0.50 | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoJ | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoE | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BoC | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Riksbank | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Norges Bank | 0.50 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| RBNZ | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Notes:

| | |
|-------------|--|
| Fed | Explanations are always given in a statement (when issued). The Beige book discusses assessment of the current economic situation. |
| ECB | Explained when there is a press conference. Since November 2001, a press conference is held after every meeting (previously, once a month). The "Editorial" in the Monthly Bulletin discusses assessment of the current economic situation. |
| BoJ | Explained when there is a press conference. Since October 2003, a press conference is held after every meeting (previously, once a month). Since July 2008, a statement is also available. The monthly report on economic and financial developments provides an assessment of the current economic situation. |
| BoE | Generally no explanation is provided (with very few exceptions). |
| BoC | Explanations have been given since December 2000 with the introduction of a fixed-date schedule for monetary policy decisions. |
| Riksbank | Since 2000, a statement (but no press conference) provides explanation. Before, statements were published only when an inflation report was released at the same time. |
| SNB | Always explained along with the announcement. |
| Norges Bank | In the course of 1999, explanations were sometimes provided. From 2000 to 2001, no explanation was given in a statement. Since 2002, a press conference is held even if there is no change in the policy stance. |
| RBA | Explanations have been made available since December 2007. |
| RBNZ | In 1999, explanations were occasionally given. Since 2000, explanations have always been given. |
| BoK | Explanations always given in a policy decision statement. |

II. Policy decision

3. Future policy guidance

Does the central bank give explicit guidance concerning its future policy direction?

| | |
|------|---|
| 1.00 | A quantitative path of its own future policy rate projections is used as a basis of discussion. |
| 0.75 | Some degree of conditional commitment is explicitly given. |
| 0.50 | A policy decision statement usually contains some verbal forward-looking guidance. |
| 0.25 | Verbal forward-looking guidance is provided less frequently. |
| 0.00 | No formal (<i>i.e.</i> written) guidance exists. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| ECB | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BoJ | 0.00 | 0.00 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.25 | 0.25 | 0.50 | 0.50 |
| BoE | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BoC | 0.00 | 0.00 | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 |
| Riksbank | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 | 1.00 |
| SNB | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Norges Bank | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.50 | 0.50 |
| RBNZ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.50 |

Notes:

| | |
|-------------|---|
| Fed | Since May 1999, some forward-looking guidance has been provided in a policy decision statement. |
| ECB | No future policy inclination is explicitly provided (except, occasionally, through the use of certain phrases during press conferences). |
| BoJ | From March 2001 to March 2006 (quantitative easing), an explicit commitment to keep existing policy until core CPI stably registered positive changes. Since April 2003, verbal guidance has been given in semi-annual projection releases. Since July 2008, the Bank's thinking on the future conduct of monetary policy is communicated along with the policy decision. |
| BoE | No explicit inclination is provided, either in a policy decision statement or a quarterly projection publication. |
| BoC | Since mid-2002, some forward-looking guidance has been provided in a policy decision statement. Since Q2 2009, more explicit conditional commitment is provided. |
| Riksbank | Projection releases usually contain discussion on future monetary policy as concluding remarks. From 2004 to 2006, a policy decision statement includes some verbal guidance. Since 2007, its own repo rate projections are provided. |
| SNB | No explicit inclination is provided, either in a policy decision statement or a quarterly projection publication. |
| Norges Bank | From December 1999 to Q2 of 2005, some verbal guidance was given. Since Q3 of 2005, its own rate projections have been presented. |
| RBA | Since December 2007, some forward-looking guidance has been provided in a policy decision statement. |
| RBNZ | Some quantitative guidance has always been available, with clearer implication after the introduction of the Official Cash Rate scheme. |
| BoK | No future policy inclination was explicitly provided until the first meeting in October, 2008. Since the second meeting in October 2008, the policy statements include some forward-looking guidance. |

III. Economic analysis

1. Frequency of projection publication

How frequently does the central bank publish its own forward-looking assessment of the economy along with its own inflation/output projections?

| | |
|------|---|
| 1.00 | More than quarterly. |
| 0.75 | Quarterly. |
| 0.50 | Three times a year. |
| 0.25 | Twice a year (0.3 if with interim assessment in between). |
| 0.00 | No projection (0.1 for annual publication). |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.75 | 0.75 |
| ECB | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| BoJ | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.30 | 0.30 | 0.30 | 0.30 | 0.75 | 0.75 |
| BoE | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| BoC | 0.25 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| Riksbank | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.50 | 0.75 | 1.00 | 1.00 |
| SNB | 0.10 | 0.30 | 0.30 | 0.30 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| Norges Bank | 0.75 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| RBA | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| RBNZ | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| BoK | 0.00 | 0.00 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.50 |

Notes:

| | |
|-------------|--|
| Fed | Until 2007, semi-annual projection in "Monetary policy report to the Congress". Since 2008, quarterly publication have become available (in FOMC minutes). |
| ECB | From December 2000 to the mid-2004, semi-annual (Euro system Staff Macroeconomic Projections). Since September 2004, quarterly also with ECB staff macroeconomic projections. |
| BoJ | From October 2000, semi-annual. From January 2004, interim assessment became available. From July 2008, quarterly publication. |
| BoE | "Inflation Report" published quarterly. |
| BoC | Monetary Policy Report or the Monetary Policy Report Update four times a year (in 1999, semi-annual publication with no update). |
| Riksbank | Quarterly "Inflation Report" until 2005. In 2006, "Monetary Policy Report" three times a year. In 2007, "Monetary Policy Report" three times a year plus one "Update". From 2008, "Monetary Policy Report" three times a year plus three "Updates" (for every scheduled meeting). |
| SNB | In 1999, only once at the end of the year. From 2000 to 2002, twice a year with interim assessments in between. After 2003, quarterly in "Monetary Policy Report". |
| Norges Bank | Inflation Report. Quarterly until 2000. From 2001, three times a year. |
| RBA | Quarterly "Statement on Monetary Policy" since 2001. Until 2000, quarterly with semi-annual publication of "Statement on Monetary Policy" plus "The Economy and Financial Markets" in between. |
| RBNZ | Quarterly "Monetary Policy Statement". |
| BoK | Research Department issues its outlook twice a year from 2002. "Monetary Policy Report" (once a year in 2003 and 2004, from 2005 twice a year) contained projections until 2008. In 2009, only the Research Department outlook is made available but three times a year, with an April update. |

III. Economic analysis

2. Endorsement of the decision-making body

Do the projections represent the view of the decision-making body?

| | |
|------|---|
| 1.00 | Yes. |
| 0.75 | |
| 0.50 | |
| 0.25 | Not endorsed, but some verbal assessment by decision makers is given. |
| 0.00 | No (just "staff" projections). |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| ECB | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| BoJ | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoE | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Riksbank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Norges Bank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBNZ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 |

Notes:

| | |
|-------------|---|
| Fed | Projections represent the view of the decision-making body (each member submits his or her own projections). |
| ECB | Staff projections that do not necessarily represent the views of the decision-making body. From September 2004, views of the decision-making body is expressed as risk assessment of the projections included in the introductory statement for the press conference. |
| BoJ | Projections represent the view of the decision-making body (each voting member submits his or her own projections). |
| BoE | Projections represent the view of the decision-making body (one set of projections is presented as a representative view of the decision-making body). |
| BoC | Projections represent the view of the decision-making body (one set of projections is presented as a representative view of the decision-making body). |
| Riksbank | Projections represent the view of the decision-making body (one set of projections is presented as a representative view of the decision-making body). |
| SNB | Projections represent the view of the decision-making body (one set of projections is presented as a representative view of the decision-making body). |
| Norges Bank | Projections represent the view of the decision-making body (one set of projections is presented as a representative view of the decision-making body). |
| RBA | Projections represent the view of the decision-making body (one set of projections is presented as a representative view of the decision-making body). |
| RBNZ | Projections represent the view of the decision-making body (one set of projections is presented as a representative view of the decision-making body). |
| BoK | Projections presented in Monetary Policy Reports (only once a year in 2003 and 2004) represent the view of the decision-making body (one set of projections is presented as a representative view of the decision-making body). The Research Department outlook is the staff's views. |

III. Economic analysis

3.1. Inflation projection: basic nature

How are inflation projections presented?

| | |
|------|---|
| 1.00 | Full projections are provided. |
| 0.75 | |
| 0.50 | Only rough account of outlook is given. |
| 0.25 | |
| 0.00 | No projection. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| ECB | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoJ | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoE | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Riksbank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Norges Bank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 | 1.00 |
| RBNZ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 0.00 | 0.00 | 0.00 | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Notes:

| | |
|-------------|--|
| Fed | Full projections. |
| ECB | Full projections. |
| BoJ | Full projections. |
| BoE | Full projections. |
| BoC | Until January 2003, only rough account of the outlook was given. Since April 2003, detailed projections have been available. |
| Riksbank | Full projections. |
| SNB | Full projections. |
| Norges Bank | Full projections. |
| RBA | Until the end of 2006, only rough account of the outlook was given. Since 2007, detailed projections have been available. |
| RBNZ | Full projections. |
| BoK | In 2002, only rough projections were given. From 2003, full projections. |

III. Economic analysis

3.2. Inflation projection: projection time horizon

What is the projection time horizon for inflation projections?

| | |
|------|--|
| 1.00 | Three years ahead or longer (Always 12 quarters ahead or more beyond the current quarter). |
| 0.75 | Up to three years ahead (Between 9 to 12 quarters ahead beyond the current quarter). |
| 0.50 | Up to two years ahead (Between 5 to 8 quarters ahead beyond the current quarter). |
| 0.25 | Up to one year ahead (Up to 4 quarters beyond the current quarter). |
| 0.00 | No projection. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.50 | 0.50 | 0.50 | 0.75 | 1.00 |
| ECB | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| BoJ | 0.00 | 0.25 | 0.38 | 0.38 | 0.38 | 0.38 | 0.50 | 0.50 | 0.50 | 0.56 | 0.56 |
| BoE | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 0.38 | 0.38 | 0.38 | 0.38 | 0.50 | 0.50 | 0.50 | 0.63 | 0.63 | 0.63 | 0.63 |
| Riksbank | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| Norges Bank | 0.75 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 0.38 | 0.38 | 0.38 | 0.38 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 | 0.75 |
| RBNZ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 0.00 | 0.00 | 0.00 | 0.25 | 0.38 | 0.50 | 0.50 | 0.25 | 0.25 | 0.25 | 0.50 |

Notes:

| | |
|-------------|---|
| Fed | Until 2004, either up to one year ahead or up to two years ahead. From 2005 to 2007, always up to two years ahead. From 2008, quarterly projections cover up to three years ahead. In 2009, further extension with longer-run projections. |
| ECB | Two-year-ahead projections. |
| BoJ | In 2000, up to one year. From 2001 to 2004, one of the semi-annual projections covered one year ahead and the other up to two years ahead. From 2005, both semi-annual projections covered up to two years. From 2008, the last quarterly projection of the year in October also covers up to three years ahead. |
| BoE | Until Q2 2004, always two-year-ahead projection. From Q3 2004 onward, three-year-ahead projections are always reported. |
| BoC | Until 2002 (including rough projections), projections covered either up to one year or two years ahead. From 2003 to 2005, projections always covered up to two years ahead. Since 2006, projections cover either up to three years ahead or two years ahead. |
| Riksbank | Until Q2 of 2005, always two-year-ahead projection. From Q3 of 2005 onward, three-year-ahead projections are always available. |
| SNB | Projections always cover up to three years ahead. |
| Norges Bank | In 1999, up to three year ahead. From 2000 to 2004, projections covered either up to two or three years ahead. From 2005, three-year-ahead projections are always reported, |
| RBA | In the early years, projections are presented in such broad terms that it is difficult to pin point the exact time horizon, but they covered at most two years. From 2003 to 2007, always up to two years. From 2008, projections cover up to three years ahead. |
| RBNZ | Annual projection cover three years ahead or more (quarterly projection with slightly shorter time horizon, however). |
| BoK | For projections in Monetary Policy Report, in 2003, inflation projections covered up to two years ahead. In 2004, up to three years ahead. In 2005, up to two years ahead. From 2006 to 2008, up to one year. Research Department projections usually cover up to one year horizon, except in 2009 (up to two years). |

III. Economic analysis

3.3. Inflation projection: projection frequency

What is the inflation projection frequency; annual, semi-annual or quarterly?

| | |
|------|--|
| 1.00 | Quarterly projection in all periods. |
| 0.75 | Quarterly period in the immediate future, subsequently semi-annual. |
| 0.50 | Semi-annual projection in all periods. |
| 0.25 | Annual projections expressed as 4th-quarter-to-4th-quarter changes (or semi-annual in immediate periods only). |
| 0.00 | Calendar / fiscal year average only. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| ECB | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BoJ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BoE | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 0.00 | 0.00 | 0.00 | 0.00 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| Riksbank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Norges Bank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.50 | 0.50 |
| RBNZ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 0.00 | 0.00 | 0.00 | 0.50 | 0.75 | 0.75 | 1.00 | 1.00 | 1.00 | 1.00 | 0.25 |

Notes:

| | |
|-------------|--|
| Fed | 4th-quarter-to-4th-quarter changes. |
| ECB | Calendar year projections only. |
| BoJ | Fiscal year projections only. |
| BoE | Quarterly projections. |
| BoC | Until January 2003, calendar year projections only. From April 2003 on, quarter projections for the immediate future, followed by semi-annual projections. |
| Riksbank | Quarterly projections. |
| SNB | Quarterly projections. |
| Norges Bank | Quarterly projections. |
| RBA | Until 2006, rough account of calendar year projections only. From 2007, semi-annual projections. |
| RBNZ | Quarterly projections. |
| BoK | Monetary policy reports include quarterly projections. The Research Department reports semi-annual projections (in 2009, two-year ahead projections are annual). |

III. Economic analysis

3.4. Inflation projection: uncertainty

Does the projection provide quantitative information on the current degree of uncertainty around the main inflation projection?

| | | | | | | | | | | | |
|------|--|--|--|--|--|--|--|--|--|--|--|
| 1.00 | Degree of uncertainty summarised in a single chart. | | | | | | | | | | |
| 0.75 | Range where distribution within the range are made available. | | | | | | | | | | |
| 0.50 | Ranges are given that show current degree of uncertainty. | | | | | | | | | | |
| 0.25 | Ranges are given, but not necessarily showing current degree of uncertainty. | | | | | | | | | | |
| 0.00 | No quantitative account. | | | | | | | | | | |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 | 0.75 |
| ECB | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| BoJ | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 |
| BoE | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 |
| Riksbank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Norges Bank | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| RBNZ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BoK | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 |

Notes:

- Fed Ranges of projections submitted by individual board members have always been reported. Since 2008, distribution within the range has also been made available.
- ECB Given in a range based on past standard errors only, independent of current degree of uncertainty.
- BoJ Ranges of projections submitted by individual board members have always been reported. Since 2008, participants' central, maximum and minimum projections have also been made available (called "risk balance sheet").
- BoE Fan chart.
- BoC From Q2 2009, fan chart for CPI has become available.
- Riksbank Fan chart.
- SNB No quantitative account of risk or uncertainty.
- Norges Bank Fan chart available from Q4 2000.
- RBA No quantitative account of risk or uncertainty.
- RBNZ No quantitative account of risk or uncertainty.
- BoK Fan chart (only in the Monetary Policy Report).

III. Economic analysis

4.1. Output projection: basic nature

How are output projections presented?

| | |
|------|---|
| 1.00 | Full projections are provided. |
| 0.75 | |
| 0.50 | Only rough account of outlook is given. |
| 0.25 | |
| 0.00 | No projection. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| ECB | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoJ | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoE | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Riksbank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 0.50 | 0.50 | 0.50 | 0.50 | 0.00 | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| Norges Bank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 |
| RBNZ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 0.00 | 0.00 | 0.00 | 0.50 | 0.75 | 0.75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Notes:

| | |
|-------------|---|
| Fed | Full projections. |
| ECB | Full projections. |
| BoJ | Full projections. |
| BoE | Full projections. |
| BoC | Until January 2004, only rough account of the outlook was given. Since April 2004, detailed projections have been available. |
| Riksbank | Until Q2 1999, only rough accounts were given for output projection. After that, full projections are presented. |
| SNB | Until 2002, and from Q2 2005 onward, rough account of GDP projections is given. Between 2003 and Q2 2005, however, no GDP projections were presented. |
| Norges Bank | Full projections. |
| RBA | From Q4 2005 to the end of 2007, rough account of GDP projections was given. Since 2008, full GDP projections have been available. |
| RBNZ | Full projections. |
| BoK | In 2002, rough account only. From 2003 to the first report of 2005, very rough account of GDP outlook was available in the Monetary Policy Report (Research Department outlook has given full projections since 2003). Since the second report of 2005, full projections have been available. |

III. Economic analysis

4.2. Output projection: projection time horizon

What is the projection time horizon for output projections?

| | |
|------|--|
| 1.00 | Three years ahead or longer (Always 12 quarters ahead or more beyond the current quarter). |
| 0.75 | Up to three years ahead (Between 9 to 12 quarters ahead beyond the current quarter). |
| 0.50 | Up to two years ahead (Between 5 to 8 quarters ahead beyond the current quarter). |
| 0.25 | Up to one year ahead (Up to 4 quarters beyond the current quarter). |
| 0.00 | No projection. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.50 | 0.50 | 0.50 | 0.75 | 1.00 |
| ECB | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| BoJ | 0.00 | 0.25 | 0.38 | 0.38 | 0.38 | 0.38 | 0.50 | 0.50 | 0.50 | 0.56 | 0.56 |
| BoE | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.50 | 0.50 | 0.63 | 0.63 | 0.63 | 0.63 |
| Riksbank | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 1.00 | 1.00 | 1.00 |
| SNB | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Norges Bank | 0.75 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.50 | 0.50 | 0.75 | 0.75 |
| RBNZ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 0.00 | 0.00 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.50 |

Notes:

| | |
|-------------|--|
| Fed | Until 2004, either up to one year ahead or up to two years ahead. From 2005 to 2007, always up to two years ahead. From 2008, quarterly projections cover up to three years ahead. In 2009, further extension with longer-run projections. |
| ECB | Two-year-ahead projections. |
| BoJ | In 2000, up to one year. From 2001 to 2004, one of the semi-annual projections covered one year ahead and the other up to two years ahead. From 2005, both semi-annual projections covered up to two years. From 2008, the last quarterly projection of the year in October also covers up to three years ahead. |
| BoE | Until Q2 2004, always two-year-ahead projection. From Q3 of 2004 onward, three-year-ahead projections are always available. |
| BoC | Until 2003 (including rough projections), projections cover either up to one year or two years ahead. From 2004 to 2005, projections always covered up to two years ahead. From 2006, projections cover either up to three years ahead or two years ahead. |
| Riksbank | Until the end of 2006, either up to two or three years. From 2007, always three years ahead. |
| SNB | GDP projections are presented in a rough manner and they usually cover up to one year (except between 2003 and Q2 2005 when no GDP projections were presented). |
| Norges Bank | In 1999, up to three years ahead. In 2000 to 2004, up to either two or three years ahead. From 2005, three-year-ahead projections are always available, |
| RBA | From Q4 2005 to the end of 2007, up to two years ahead. From 2008, projections cover up to three years ahead. |
| RBNZ | Annual projection cover three years ahead or more (quarterly projection with slightly shorter time horizon, though). |
| BoK | Only up to one year ahead (except in 2009, up to two years). |

III. Economic analysis

4.3. Output projection: projection frequency

What is the output projection frequency; annual, semi-annual or quarterly?

| | |
|------|--|
| 1.00 | Quarterly projection in all periods. |
| 0.75 | Quarterly period in the immediate future, subsequently semi-annual. |
| 0.50 | Semi-annual projection in all periods. |
| 0.25 | Annual projections expressed as 4th-quarter-to-4th-quarter changes (or semi-annual in immediate periods only). |
| 0.00 | Calendar / fiscal year average only. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| ECB | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BoJ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BoE | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| Riksbank | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Norges Bank | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.50 |
| RBNZ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 0.00 | 0.00 | 0.00 | 0.25 | 0.38 | 0.38 | 1.00 | 1.00 | 1.00 | 1.00 | 0.25 |

Notes:

| | |
|-------------|--|
| Fed | 4th-quarter-to-4th-quarter changes. |
| ECB | Calendar year projections only. |
| BoJ | Fiscal year projections only. |
| BoE | Quarterly projections. |
| BoC | Until Q2 2005, calendar year projections only. From Q3 2005 onward, quarter projections in the immediate future, followed by semi-annual projections. |
| Riksbank | Until Q3 2003, calendar year projections only. After Q4 2003, quarterly projections. |
| SNB | Calendar year projections only. |
| Norges Bank | For real GDP, calendar year projections only. However, from Q3 2005, the quarterly path of the output gap is shown. |
| RBA | Until the end of 2007, only rough account of calendar year projections. From 2008, semi-annual projections. |
| RBNZ | Quarterly projection of either real GDP or output gaps have been generally available. |
| BoK | As for the Monetary Policy Report, from 2003 to the first report of 2005, very rough account of the annual GDP outlook. And from the second report of 2005, quarterly path is given. The Research Department projections are generally semi-annual (in 2009, two-year ahead projection is annual). |

III. Economic analysis

4.4. Output projection: uncertainty

Does the projection provide quantitative information on the current degree of uncertainty around the main output projection?

| | |
|------|--|
| 1.00 | Degree of uncertainty summarised in a single chart. |
| 0.75 | Range where distribution within the range are made available. |
| 0.50 | Ranges are given that show current degree of uncertainty. |
| 0.25 | Ranges are given, but not necessarily showing current degree of uncertainty. |
| 0.00 | No quantitative account. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 | 0.75 |
| ECB | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| BoJ | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 |
| BoE | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Riksbank | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| SNB | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Norges Bank | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| RBNZ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BoK | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 |

Notes:

- Fed Ranges of projections submitted by individual board members have always been reported. Since 2008, distribution within the range has also been made available.
- ECB Given in a range based on past standard errors only, independent of current degree of uncertainty.
- BoJ Ranges of projections submitted by individual board members have always been reported. Since 2008, participants' central, maximum and minimum projections have also been made available (called "risk balance sheet").
- BoE Fan chart.
- BoC No quantitative account of risk or uncertainty.
- Riksbank Fan chart introduced in 2007.
- SNB No quantitative account of risk or uncertainty.
- Norges Bank From Q3 2004, fan chart (until Q2 2005, for annual GDP, quarterly for output gap thereafter)
- RBA No quantitative account of risk or uncertainty.
- RBNZ No quantitative account of risk or uncertainty.
- BoK Fan chart introduced in the second report of 2005 (but in the Monetary Policy Report only).

III. Economic analysis

5. Underlying assumptions

Do the projections come with explicit account of underlying assumptions (interest rate, exchange rate, commodity prices, growth of trading partners, etc.)?

| | |
|------|---|
| 1.00 | Extensive disclosure on underlying assumptions. |
| 0.75 | |
| 0.50 | Some limited disclosure on the underlying assumption (at least verbal explanation of policy rate assumption). |
| 0.25 | |
| 0.00 | No explicit information on assumptions. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ECB | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoJ | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| BoE | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Riksbank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Norges Bank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| RBNZ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 0.00 | 0.00 | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |

Notes:

| | |
|-------------|--|
| Fed | Underlying assumptions differ from one member to another, which is not clearly disclosed. |
| ECB | Underlying assumptions are clearly laid out. |
| BoJ | Underlying assumptions differ from one voting member to another. Only a rough account of interest rate assumptions is given (constant rate or market-expectation based). |
| BoE | Underlying assumptions are clearly laid out. |
| BoC | Underlying assumptions are clearly laid out after the introduction of full projection for inflation in April 2003. |
| Riksbank | Underlying assumptions are clearly laid out. |
| SNB | Underlying assumptions are clearly laid out. |
| Norges Bank | Underlying assumptions are clearly laid out. |
| RBA | Underlying assumptions are clearly laid out since 2007. |
| RBNZ | Underlying assumptions are clearly laid out. |
| BoK | Underlying assumptions are clearly disclosed only in the Research Department's outlook. |

IV. Decision-making process

1. Minutes

Does the central bank reveal, in the form of comprehensive minutes, detailed information about how a decision has been reached? Is this information available in a timely manner?

| | |
|------|--|
| 1.00 | Available within four weeks after the meeting and before the next meeting. |
| 0.75 | |
| 0.50 | Available within four weeks after the meeting but not before the next meeting. |
| 0.25 | Available within eight weeks. |
| 0.00 | No minutes released (or available but with a substantial lag). |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| ECB | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BoJ | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| BoE | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Riksbank | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| SNB | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Norges Bank | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| RBA | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| RBNZ | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoK | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |

Notes:

| | |
|-------------|--|
| Fed | Until the end of 2004, released about three days after the next meeting. Since 2005, available with a lag of three weeks. |
| ECB | No minutes published. |
| BoJ | Initially available 4 to 8 weeks after the meeting. Since September 2000, released after about 4 weeks. In any case, minutes are made available slightly after the next meeting. |
| BoE | Available within two weeks. |
| BoC | No minutes published. |
| Riksbank | Released with a lag of four to eight weeks until September 99. After that, published within two weeks. |
| SNB | No minutes published. |
| Norges Bank | No minutes published. |
| RBA | Minutes have become available with a two-week lag from December 2007. |
| RBNZ | Not applicable (the governor decides alone). Instead, the explanation of the policy decision is judged to serve the same purpose. |
| BoK | Until for the March 2005 meeting, minutes were available only with a long lag of about 3.5 months. From April 2005, released with a lag of six weeks. |

IV. Decision-making process

2. Voting records

Does the central bank, where decisions are made in committees, disclose voting records with attributions in a timely manner?

| | |
|------|---|
| 1.00 | Available immediately after policy meeting. |
| 0.75 | Available within four weeks after the meeting and before the next meeting. |
| 0.50 | Available within four weeks after the meeting but not before the next meeting. |
| 0.25 | Available within eight weeks or explicitly states that decisions are made on "consensus" basis. |
| 0.00 | No publication of voting records. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 0.25 | 0.25 | 0.25 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| ECB | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| BoJ | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 | 1.00 |
| BoE | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| BoC | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Riksbank | 0.00 | 0.00 | 0.00 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 1.00 |
| SNB | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Norges Bank | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| RBA | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| RBNZ | n/a |
| BoK | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |

Notes:

| | |
|-------------|---|
| Fed | Available in minutes. Since March 2002, also available immediately after each policy meeting. |
| ECB | While no voting records are made available, it is usually stated that decisions are taken on a consensus basis. |
| BoJ | Available in minutes (which are not available before the next meeting). Since February 2007, also available immediately after the policy meeting. |
| BoE | Available in minutes. |
| BoC | While no voting records are made available, it is stated that decisions are taken on a consensus basis. |
| Riksbank | Made available in minutes after May 2002 with clarification about what constitutes reservation. Since April 2009, voting records have become available immediately after each policy meeting. |
| SNB | While no voting records are made available, it is stated that decisions are taken on a consensus basis. |
| Norges Bank | Not available. |
| RBA | While no voting records are made available, it is stated that decisions are taken on a consensus basis. |
| RBNZ | Not applicable (the governor alone decides policy stance). |
| BoK | Available in minutes (at least since 2005). |

IV. Decision-making process

3. Public appearances

Does the central bank have occasions to hold press conferences or testimonies on a regular basis?

| | |
|------|--|
| 1.00 | After every policy meeting. |
| 0.75 | After policy meeting but not always (only when policy changes, once a month, etc). |
| 0.50 | After publication of projections (three to four times a year). |
| 0.25 | Other occasions (at least semi-annually). |
| 0.00 | No regular appearance. |

| | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Fed | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| ECB | 0.75 | 0.75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoJ | 0.75 | 0.75 | 0.75 | 0.75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BoE | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| BoC | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| Riksbank | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| SNB | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Norges Bank | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| RBA | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| RBNZ | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| BoK | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Notes:

| | |
|-------------|--|
| Fed | Regular public appearance is confined to semi-annual testimony before the House of Representatives and the Senate. |
| ECB | Press conference once a month until October 2001 and after every policy meeting since November 2001. |
| BoJ | Press conference once a month until September 2003 and after every policy meeting since October 2003. |
| BoE | Press conference after the release of the quarterly projection publication. |
| BoC | Press conference after the release of the projection publication (until 1999, semi-annually; from 2000 quarterly). |
| Riksbank | Press conference after decisions to change policy stances and publication of the projection publication. |
| SNB | A media conference is held twice a year. |
| Norges Bank | Press conference after every policy meeting at least from 2002 (information before is not available on the website). |
| RBA | Semi-annual testimony before the House of Representatives. |
| RBNZ | Press conference after the release of the quarterly projection publication. |
| BoK | Press conference after every policy meeting. |

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The full series of Economics Department Working Papers can be consulted at www.oecd.org/eco/working_papers/

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