IMES DISCUSSION PAPER SERIES

Sources of Disagreement in Inflation Forecasts: A Cross-Country Empirical Investigation

Pierre L. Siklos

Discussion Paper No. 2010-E-26

IMES

INSTITUTE FOR MONETARY AND ECONOMIC STUDIES

BANK OF JAPAN

2-1-1 NIHONBASHI-HONGOKUCHO
CHUO-KU, TOKYO 103-8660
JAPAN

You can download this and other papers at the IMES Web site:

http://www.imes.boj.or.jp

IMES Discussion Paper Series 2010-E-26
November 2010

Sources of Disagreement in Inflation Forecasts: A Cross-Country Empirical Investigation

Pierre L. Siklos*

Abstract

Central to the conduct of monetary policy is the preparation and evaluation of inflation forecasts. Inflation forecast are, however, not unique. Central banks, professional organizations, international institutions, households and firms also generate forecasts of inflation, among other macroeconomic variables that reflect the expected state of the economy. This paper estimates inflation forecast disagreement for nine economies, five of which target inflation over the 1999-2009 period. I find that central bank transparency tends to increase forecast disagreement. To the extent that this reflects the attention paid to inflation performance this suggests that transparency is beneficial. Also, it appears that inflation forecasts are largely driven by a global component but the impact of this global component on forecast disagreement is mixed.

Keywords: forecast disagreement; central bank transparency; inflation, quantile regression; panel regression
JEL classification: E52, E58, C53

* Professor, Wilfrid Laurier University (E-mail: psiklos@wlu.ca)

This paper was prepared in part while the author was a visiting scholar at the Institute for Monetary and Economic Studies, Bank of Japan, May 2010. Comments by Michael Ehrmann, seminar participants at the Bank of Japan, especially Shigenori Shiratsuka, Nao Sudou, and Kozo Ueda, are gratefully acknowledged. An appendix contains information about data sources. Another appendix, available on request, contains additional plots and tables not included here to conserve space. I am also grateful to the various central banks and Institutes I have visited over the years, and to the Bank for International Settlements, for their assistance in providing me with some of the data used in this study. Views expressed in this paper are those of the author and do not necessarily reflect the official views of the Bank of Japan.

1. Introduction

Inflation forecasts lie at the heart of most central banks' monetary policy strategies, whether or not the monetary authority is mandated to achieve a numerical inflation objective. Yet, there is no such thing as a single or unique inflation forecast. A wide variety of forecasts are published and they reflect differences not only about the future but are constructed based on different information sets, a well being more or less sensitive to constant stream of macroeconomic news or information published by increasingly transparent central banks. Astonishingly, however, there are comparatively few attempts to measure, let alone explain, how and why forecasts disagree. Why should we be interested in forecast disagreement? Bernanke (2008, 2007), among others, observed that economists have yet to fully grasp the dynamics on inflation and, by implication, inflation expectations. Consequently, policy makers as well as academics are still searching for explanations about the ingredients necessary to anchor (i.e., render relatively insensitive inflation expectations to the arrival of new information) inflation in both the short-run and the long-run. Indeed, Bernanke (2007) suggests that while long-run expectations are not "perfectly anchored in real economies" he goes on to say that "…the extent to which they are anchored can change, depending on economic developments and (most importantly) the current and past conduct of monetary policy." Given the benign nature of inflation in the past decade or more, especially in the industrial world, Bernanke might be forgiven for believing that this outcome reflects well-anchored inflationary expectations, although U.S. evidence suggests that long-run inflation expectations may not be as stable as we think (e.g, see Gurkaynak, Sack, and Swanson (2005)).

This paper begins with the observation that different forecasts are unequally sensitive to incoming economic developments. There is considerable debate in the literature about the reasons behind this stylized fact and, in particular, the role played by information emanating from central banks. Whatever the sources of this sensitivity it is clear that there is considerable disagreement in inflation forecasts. Indeed, unlike similar studies that typically examine the range of forecasts from a single source, this paper suggests that there is something to be gained from an analysis of as wide a variety of forecast

types as data availability permits. It is precisely by estimating the amount of forecast disagreement across various kinds of forecasts, from professional to central banks through to survey-based forecasts, that observers can determine, for example, how central bank transparency, or the choice of a monetary policy strategy, influences forecast disagreement. If the conduct of monetary policy is crucial to a central bank's ability to anchor inflationary expectations then it is also useful to ask to what extent inflation forecasts are driven by local or domestic factors as opposed to global influences. While both are no doubt reflected in realized inflation rates most central banks have come to the conclusion that global factors have played an increasingly important role during the last decade (e.g., see IMF 2006). The foregoing observations suggest that there is still a great deal to be learned from observing varieties of inflation forecasts in order to understand what drives forecast disagreement.

The aim of this paper then is to estimate a model of forecast disagreement and ask to what extent global versus domestic factors are part of the explanation, the influence of central bank transparency and the monetary policy strategy, as well as other variables that reflect changes in economic developments.

The rest of the paper is structured as follows. The next section provides definitions of forecast disagreement and considers the state of the theoretical debate concerning the role of transparency and the informational and other constraints, some self-imposed, reflected in forecasts for inflation which may give rise to forecast disagreement. Section 3 describes the data and outlines the econometric modeling strategy followed. Empirical results are discussed in section 4 prior to some conclusions being drawn in section 5.

Briefly, the principal conclusion is that changes in central bank transparency are a critical element in influencing forecast disagreement over time. In particular, central bank transparency raises forecast disagreement. Hence, forecasters do not become more complacent when central banks are more open about the current and future outlook and their monetary policy strategy is more clearly defined. Moreover, the adoption of an inflation targeting (IT) policy strategy has had little effect on forecast disagreement. During the sample considered in this study the IT strategy became both more mature and at the same time less distinguishable from comparable monetary

policy strategies. In addition, it is also clear that what drives forecast disagreement is not only sensitive to the type of forecast examined (e.g., professional versus survey-based forecasts) but the precise location in the distribution of forecast disagreement one examines.

2. Forecast Disagreement: Measurement and Relevant Literature

A convenient way of expressing how much forecasters disagree with each other is to evaluate the degree of dispersion across forecasts of the same variable, in the present case the rate of change in a Consumer Price Index. As pointed out recently by Leduc, Rudebusch, and Weidner (2009), the concept is frequently overlooked by observers who track and report on the evolution of the state of the macro-economy. On the one hand, this is surprising given that evidence of disagreement may provide clues, for example, about how different forecasters interpret the manner in which monetary policy, in particular, may be implemented in future. In turn, policy makers would be interested in these developments if they portend a relatively different interpretation than the one the monetary authority has been trying to communicate. Yet, since the world economy has only recently exited a state of 'Great Moderation', as the period beginning around the mid-1980s up until the mid 2000s has been referred to (e.g., Bernanke 2004), there has arguably been less reason to focus on the sources of disagreement across forecasters.[1] Granger (1996) suggests, however, that much can be learned from considering varieties of forecasts. "If an economy goes through a period when it is relatively easy to forecast, resulting in narrow probability intervals, a group of competent forecasters of comparable quality should be in agreement, but if the economy is difficult to forecast you can expect less agreement between forecasters, unless they collaborate."

There is no universally agreed upon statistic for forecast disagreement. Nevertheless, the dispersion of forecasts used to quantify forecast disagreement is generally measured in one of three ways: the squared deviations in individual forecasts (e.g., Lahiri and Sheng (2008)), the inter-quartile range of forecasts (e.g., Mankiw, Reis, and Wolfers (2003), Capistrán and Timmermann (2008)), or some normalized absolute

[1] It is worth pointing out that Bernanke explicitly mentions the Great Moderation did not reach Japan.

deviation of forecasts (e.g., Banternghansa and McCracken (2009)). While all three versions of disagreement were evaluated in this study the results reported below focus on the squared deviation measure both to conserve space, as well we because the main conclusions drawn from the empirical evidence were unaffected by the chosen indicator of forecast disagreement.

Let d_{th}^{j} represent forecast disagreement at time *t*, for a forecast of horizon *h*, produced for economy *j*. Then,

$$d_{th}^{j} = \frac{1}{N_j - 1} \sum_{i=1}^{N_j} (F_{ith}^{j} - \bar{F}_{\bullet th}^{j})^2 \qquad (1)$$

where F is the forecast for inflation, N_j is the number of forecasts, i identifies the forecast, while $\bar{F}^{j}$ represents the mean forecast value across forecasters in economy *j*. For the purposes of the econometric study to follow, forecast disagreement is first evaluated for each source (i.e., each i in equation (1)). The mean value of d is then calculated for each economy *j* in the dataset. Disaggregated estimates of $\bar{d}_t$ are also evaluated for each τ set of forecasts. These include central banks as a group, survey-based forecasts, forecasts for the U.S.A. only as a possible benchmark for the global dimension of forecast disagreement, a set of common or core forecasts from forecasters that provide inflation forecasts for each one of the economies in the sample (i.e., OECD, IMF, Consensus), and a group consisting of all non survey-based forecasts. Grouping forecasts is likely to be useful for a variety of reasons. Some of the data used in this study are projections, others are actual forecasts. The time, effort, and expertise, invested into producing a view about the future is also likely to differ considerably across organizations. Moreover, the governing assumptions and models (whether of the implicit or explicit variety) used to generate estimates of the likely future course of inflation are also likely to differ considerably across the available sources. The proposed groupings represent an attempt to get at these differences in an approximate fashion.

In spite of the simplicity of the measure of equation (1) there are relatively few empirical studies that examine the evolution or sources of forecast disagreement over time. Dovern, Fritsche, and Slacalek (2009) consider the set of forecasters in the Consensus

group of forecasters in the G-7 and find that the dynamics of forecasts of real variables (e.g., real GDP growth) differs substantially from those of nominal forecasts, such as the inflation rate that is the focus of the present study. Banternghansa and McCracken (2009) rely on one of the alternative measures of forecast disagreement because they are interested in disagreement among members of the U.S. Fed's Federal Open Market Committee about the outlook for the U.S. economy.[2] Interestingly, one of their conclusions is that forecast accuracy may well take a back seat to other considerations, such as ideology, while the Fed's Vice-Chair apparently plays a consensus building role. This finding is especially true for the inflation variable (also see Ellison and Sargent (2009)) and raises all kinds of questions about the value of these forecasts for central banks struggling to decide how transparent they should be. I return to this issue below.

Relying on the inter-quartile range across the U.S. Survey of Professional Forecasters, Capistrán and Timmermann (2009) report a noticeable drop in forecast disagreement since the early 1980s and point to the changing conditional volatility of inflation as one of the sources of changes in dispersion. Siklos (2010) relies on a version of equation (1) to highlight some of the differences in forecast disagreement, between inflation and non-inflation targeting economies, since the early 1990s and finds that inflation forecast disagreement vis-à-vis the U.S., the latter a proxy for global forces affecting inflation forecasts, has declined in recent years.

It is considerably more difficult to find theoretical guidance about what explains or drives inflation forecast disagreement. Capistrán and Timmermann (2009) claim that forecasters possess an asymmetric loss function, that agents are heterogeneous, and that biases in inflation forecasts are persistent but can shift as between high and low volatility periods. The assumption of asymmetric loss and heterogeneous agents is hardly controversial. However, their finding of a significant empirical link between the level and conditional inflation forecasts is dependent on being able to fit, for example, a GARCH-type model to inflation (also see Lahiri and Sheng (2008)). The period under

[2] These are reported in the twice-yearly *Monetary Policy Report* submitted to Congress.

study is not amenable to such interpretations about the conditional volatility of inflation.[3] Many explorations of the behavior of inflation and, by implication, expectations or forecasts of inflation, rely on the concept of price stickiness (e.g., Mankiw and Reis (2002, 2006)). As a result, this imparts some persistence to inflation, as well as inflation forecasts, together with some biases in forecast errors and insensitivity to macroeconomic news. Their hypothesis is supported by U.S. data from a variety of sources (also see Mankiw, Reis, and Wolfers (2003)).

An alternative view that also gives rise to persistence is the inability of economic agents to process all of the available information (e.g., see Sims (2006), and sources within). This is particularly relevant under the current circumstances because forecasts from different sources are likely to be based on vastly different abilities to translate relevant macroeconomic information into a point forecast for inflation. For example, a central bank's forecast will likely rely on a suite of econometric models with varying degrees of sophistication. At the other end of the spectrum forecasts derived from survey-based measures will likely be based on more emotional views about the likely course of future price developments. Yet another interpretation of the behavior of inflation and inflation forecasts invites the possibility that, even if the information set agents use to form expectations is the same, these same individuals may interpret differently the signals contained in the information set (e.g., see Acemoglu, Chernozhukov, and Yildiz (2007)).

Turning to more qualitative influences on the determinants of forecast disagreement these derive exclusively from the behavior of inflation and forecasts of inflation under different monetary regimes. For example, inflation can be reduced via the granting of central bank autonomy and, to the extent that the central bank is able to act credibly and independently from political pressure, lower inflation should be the norm. Presumably, a common belief in the promise of lower inflation ought to generate less disagreement about future inflation, unless the monetary authority possesses little credibility. The same argument applies to the role of enhanced central bank transparency (e.g., van der Cruijsen and Demertzis 2007).

[3] In other words, it is not difficult to fit a sensible GARCH(1,1) type model to inflation for any of the economies considered in this study (1999-2009). Other types of conditional volatility models (e.g., TARCH) were not much more successful.

There are potentially important qualifications to the connection between central bank transparency and inflation expectations with implications for how forecast disagreement responds in an environment of enhanced transparency. First, transparency comes in different forms (e.g., see Dincer and Eichengreen 2007). Some forms of transparency such as policy and political transparency may well assist in the reduction of forecast disagreement since the central bank would be expected to keep inflation within fairly narrow bounds. This constraint would be more binding still in the case of central banks that must meet a quantified inflation objective, as is true of inflation targeting central banks. However, if there is little or no economic transparency, then forecasters and the public more generally, may not be much further ahead in knowing what the central bank is thinking and how it might react depending on the type of macroeconomic shocks hitting the economy. Moreover, even if there are improvements in all forms of transparency, the sheer increase in the volume of information produced by central banks, and perhaps by other observers of the central bank, may well have the effect of raising disagreement about future inflation. Limits in the ability to process information could well come into play in achieving this outcome.

Matters become still more complicated if the mix of enhanced transparency and the record of a monetary authority that is able to deliver on its inflation target, or promise of some form of price stability, has the effect of raising the 'rational' inattention of forecasters by lulling agents into a form of complacency. If forecasts reflect the fact that inflation will be close to the target they may well increasingly ignore incoming information about shocks hitting the economy and become 'lazy' about processing information previously used to generate a forecast. In this sense, the provision to public information can be detrimental where this is interpreted here to mean a rise in forecast disagreement (e.g., see Morris and Shin (2002)). Nevertheless, if the information provided is 'clear', then one would expect less disagreement vis-à-vis the central bank's own expectations (Morris and Shin (2005)). In the presence of a formal inflation target one would expect this expectation to be the announced numerical objective over the horizon promised by the monetary authority.

Yet another difficulty with the role of transparency and the presence of an inflation target is the possibility that they cannot be treated as exogenous determinants of forecast

disagreement. It is conceivable, for example, that a government and a central bank may choose to adopt a combination of greater transparency together with an inflation target in order to facilitate the coordination of inflation expectations. Even so, the success of such a strategy will still hinge on the credibility of policy makers to deliver the promised outcome. As will be shown below an inflation target, even one successful by most standards, is no barrier either to forecast disagreement or to inflation forecasts that depart from the announced inflation target, at least in the short-run.

Svensson (2006) demonstrates that the provision of more information is actually beneficial. Since not all the central banks in this study publish an inflation forecast, and some that do report a forecast for a version of inflation that is not exactly the same as a standard CPI inflation measure[4], we cannot directly investigate some of the foregoing implications of changing central bank transparency. However, an indicator of central bank transparency can be brought to bear on the data and can serve as an indirect measure of the role of information provision on inflation forecast disagreement. It is worth noting that Ehrmann, Eijffinger and Fratzscher (EEF; 2010) report strong empirical evidence for twelve countries, seven of which belong to the EU, while five of the countries in their sample target inflation, favoring a role for central bank communication, transparency, and inflation targeting. In particular, they favor the reliance on a central bank's own forecast, together with a numerical objective, as critical elements leading to reduced forecast dispersion.[5]

Based on some of the theoretical findings surveyed above there is a strong case to be made for an inflation target and greater central bank transparency increasing forecast disagreement. The presence of clear objectives, and a central bank committed to attaining its policy objective, arguably can lead to more resources being devoted to

[4] For example, the FOMC in the U.S. reports a forecast for the Personal Consumption Expenditures deflator. The Bank of Japan's Monetary Policy Board reports a forecast for CPI inflation that excludes fresh food prices.

[5] Their study in interested in a variety of forecasts, not just inflation. They rely on monthly data, covering the period from 1995 to 2008, from two sources, namely Consensus forecasts and the EC Household Survey. The present study relies on a much wider set of forecasts although EEF consider the individual forecasts that, for example, make up the monthly Consensus forecasts. Instead, I rely on the average of such forecasts.

divining what inflation might be in future. This outcome may also be encouraged if the central bank also publishes its own inflation forecast. Whether this is welfare enhancing is a different question. Walsh (2007) makes it clear that optimal transparency is reduced if the central bank improves its ability to forecast aggregate demand shocks but the results can be reversed when the issue revolves around the provision of advance warnings of aggregate supply shocks. Since Walsh's model focuses on the case of inflation targeting central banks there is the real possibility that agents living under such a regime actually become more sensitive to information released by their central banks. In the present context this means that forecast disagreement would be relatively higher in economies with a formal inflation target though the degree of sensitivity would also be a function of the release (and accuracy) of a central bank forecast. In a similar vein, Cornand and Heinemann (2008) make the distinction between the precision of central bank announcements and the publicity generated by such announcements. It is conceivable that both are conditions more likely to be met in economies with a formal inflation target not only for accountability reasons but also because IT central banks tend to be relatively more transparent. Under these conditions, Cornand and Heinemann show that increasing the precision of information is welfare enhancing. Not limiting the degree of publicity surrounding information releases results in an increase in the likelihood that expectations will be coordinated. Consequences include the negative welfare implications of the kind predicted by Morris and Shin (2002).

The ambiguity surrounding theoretical predictions is natural under the circumstances. Monetary policy regimes differ around the world, as does central bank transparency. Moreover, it is exceedingly difficult to identify rational inattention from complacency or other forms of inefficient information processing skills. Empirical evidence can at least contribute to determining the extent and sources of forecast disagreement. However, unlike much of the extant literature, this study relies on a wider variety of forecast sources than heretofore has typically been the case to explore cross-country determinants of forecast disagreement.

3. Econometric Methodology and Data

3.1 Econometric Methodology

Our interest in this study is to examine the empirical significance of the determinants of forecast disagreement, as defined in equation (1). It is convenient to distinguish between quantitative and qualitative factors. Hence, we can write

$$_{\tau}\bar{d}_t^j = g(\mathbf{X}_t^j, \mathbf{Z}_t^j) + \varepsilon_t^j \tag{2}$$

where *j* denotes the economy in question, **X** and **Z** are country-specific vectors of quantitative and qualitative determinants of forecast disagreement (*d*), at time t, while τ indicates the possibility that, as discussed previously, macroeconomic information is likely digested differently, with possibly different consequences for inflation forecast disagreement, across types of forecasts while ε, of course, is an error term. Equation (2), therefore, reflects the possibility that the level of disagreement, and the sensitivity of disagreement to its determinants, is conceivably different as between professionals, central banks, and households, or other groups of forecasters.

We consider several quantitative determinants of *d*. First, theory suggests that current and past monetary policy performance will partly dictate the degree of forecast disagreement. Inflation in consumer prices is a natural proxy to consider for this purpose. The relative importance of these factors remains in dispute with IMF (2006), Borio and Filardo (2006), and Bohl, Mayes, and Siklos (2010) finding in favor of the globalization and inflation hypothesis while Ball (2006), Ihrig et.al. (2007) conclude otherwise. The relative importance of global and domestic factors is also likely to be partly determined according to whether the forecast is a professional one, including forecasts made by central banks, or one made by households or businesses. The latter may be more influenced by domestic considerations alone than by external factors. Professional forecasters, and central banks, on the other hand, may be more sensitive to the role played by the growing integration of goods and financial markets. Because the decomposition into global and domestic factors is not directly observed it is useful to consider a factor model. The following specification serves as the starting point.

$$\Upsilon_t A' = \Upsilon_t \varphi(L) + \eta_t \tag{3}$$

where Υ_t is the vector of observable endogenous variables, A' are the inputs (i.e., the time series) from which the factors are derived, $\varphi(L)$ is a distributed lag function, and η is the residual term. Several variants are considered in defining the vector Υ_t. Given the discussion in the previous section concerning differences in information sets and the degree of inattention that exists amongst forecasters, the vector is defined alternatively to include all forecasts across all the economies in the sample, only survey-based forecasts, central bank forecasts, or a core of forecasts that is common across all the economies considered.[6] As defined, all vectors consist of domestic and foreign forecasts of inflation. Nevertheless, an allowance is made for the possibility that the number of variables used to extract domestic versus global components of inflation forecasts can differ. The vector of quantitative variables is rounded out by including commodity price inflation, a term spread, the output gap, and an asset prices gap. A role for commodity prices in explaining forecast disagreement stems from their role in influencing inflation in the short-run, as most recently demonstrated during the run-up and subsequent reversal in oil prices in the 2007-2009 period especially. More generally, commodity prices have long played a role in forecasting models and this also serves to highlight the critical importance of distinguishing between aggregate demand and supply shocks. The term spread too has been a staple of models used to forecast inflation and future economic activity and is, therefore, also included in the estimated specification. A similar interpretation explains the inclusion of the output gap about which controversy has recently centered over its importance as a consistent determinant of inflation, especially in the debate over the proper specification of the Phillips curve. Finally, evaluations about the conduct of monetary policy have for some years debated the role of asset prices. Space constraints prevent a theoretical discussion concerning their role in determining the stance of monetary policy. Nevertheless, while some observers have lamented the failure of some central banks to adequately account for asset price developments, it is an empirical question whether

[6] There is nothing to prevent the inclusion of realized macroeconomic time series as variables entering equation (3). However, under the assumption that the vector of forecasts already incorporates this information, this addition appears superfluous. Were these to be incorporated into the factor model specification used here, an additional term would have to be added to equation (3).

forecasters more generally have incorporated information about asset price developments into their forecasts.

Turning to qualitative determinants two variables are considered. A cross-country evaluation of the determinants of forecast disagreement must control for whether the economy in question explicitly targets inflation. In addition, central banks are also distinguished by how transparent they are. As previously discussed the connection between these two qualitative features on the conduct of monetary policy and forecast disagreement is, in theory, ambiguous but likely central to an understanding of what explains forecast disagreement.

For reasons that will become more apparent below, equation (2) will be estimated in two different ways. The distribution of inflation forecast disagreement is often concentrated in the tails of the distribution (see below). Hence, a conventional mean regression may well be unable to capture the relationship as specified in equation (2). Instead, equation (2) is estimated via the quantile regression (QR) method (e.g., see Koenker (2005)). The QR approach permits a richer examination of the statistical relationship between covariates, by estimating how the conditional quantiles of forecast disagreement are influenced by the variables that reflect of both quantitative and qualitative influences on forecast disagreement. In regression form, equation (2) would be written as

$$Q_{\theta}(\theta \left| \mathbf{X}_t^j, \mathbf{Z}_t^j \right.) = \beta_0 + \beta_1 \mathbf{X}_t^j + \beta_2 \mathbf{Z}_t^j + F_{\varepsilon}^{-1}(\theta) \qquad (4)$$

where **X** and **Z** were defined previously, θ are the quantiles, and F_ε denotes the common distribution of the errors. Equation (4) is then estimated for each economy individually. Note that since inflation forecasts are decomposed into domestic and global factors, as explained above, the inclusion of the latter implies that individual specifications do take account of foreign influences on domestic inflation forecast disagreement. Whether this form of conditioning is sufficient is an empirical question.

Alternatively, we can estimate equation (2) in a panel setting with proper allowance for the potential endogeneity of some of the right hand side variables. For example, it is likely that while past inflation performance will partially determine forecast disagreement

there is also the possibility that current inflation may affect how much disagreement there is over the future course of inflation. Similar arguments apply to some of the other presumed determinants of forecast disagreement, such as the degree of transparency and whether the economy in question explicitly targets inflation. GMM estimation seems called for under the circumstances.[7] In this connection an important question is whether to use a difference GMM which takes account of the time series dimension of the data. Nevertheless, as will be seen below, while there is evidence that differencing is appropriate, suggestive of the need to estimate a dynamic panel model (i.e., the Arellano and Bond (1991) type estimator; also see Arellano and Bover (1995)), the results also point to the possibility that resort to orthogonal deviations might be preferred in order to remove individual effects (e.g., see Hayakawa (2009)). A related problem is that of weak instruments. The F-test based on the first stage regression developed by Staiger and Stock (1997) when one of the regressors (here the likely culprit is realized inflation) is endogenous is used to check for weak instruments.[8] Another potential concern is that, under the circumstances, there is the danger that resort to a dynamic panel GMM can lead to a proliferation of instruments (Roodman (2009)). The number of instruments is kept to a minimum but it is also the case that the instrument set in this study appears to overcome the weak instruments problem.

3.2 Data and Practical Considerations

An appendix provides details of the data sources and other details about the inflation forecasts used in this study. All estimates presented in the following section are based on data converted to the quarterly frequency. The estimates to be discussed below consider the experience of nine economies, five of which explicitly target inflation. The inflation targeting (IT) group of countries consists of Australia, Canada, New Zealand, Sweden, and the U.K. The remaining economies considered are: the euro area, Japan, Switzerland, and the U.S.A. The full sample is from 1999Q1 to 2009Q4, inclusive.

[7] The specifications were also estimated using instrumental variable estimation in a panel setting. Overall, the conclusions are broadly consistent with the ones reported in the next section.

[8] The first stage regression is separately estimated for each individual economy considered. As far as I am aware there are no tests for weak instruments in dynamic panel models.

While forecasts are available for a longer time period, including data for the decade of the 1990s[9] would have to contend with the problem of taking account of the disinflation that defined the experience of all of the economies in the dataset. Moreover, the economies in the sample that explicitly target inflation were in the early phase of the introduction of this policy regime.[10] Given the record of inflation in previous decades it is also doubtful that credibility was achieved immediately.[11] It is also convenient to generate estimates over a sample period from the time the euro area was created. Specifications that include data prior to 1999 would have to cope with more 'artificial' estimates of inflation for the euro zone, let alone inflation forecasts. Another advantage of a sample that starts in 1999 is that the distinction between inflation and non-inflation targeting economies becomes more apparent. Table 1 provides a succinct summary of the main characteristics of the monetary policy regimes in the nine economies considered in the study. The IT group virtually has the same inflation objectives, even if there are some subtle differences in what is targeted and the horizon over which inflation is targeted. The remaining economies also evince a strong interest in price stability though there are interesting differences in how the principal objectives of monetary policy are defined.

Table 2 provides some details about the number and types of forecasts that are the subject of the econometric investigation described in the next section. A total of 77 forecasts from a variety of sources are used. A majority of them (46) are from professionals or various international institutions such as the IMF (i.e., the World Economic Outlook, or WEO forecasts), or the OECD. Professional forecasts include the mean forecast from Consensus Economics, forecasts collected from *The Economist*

[9] Siklos (2010) examines forecast disagreement relative to the U.S. experience since 1990 but also finds that some estimated relationships appear to break down toward the end of the 1990s. Whether the proximate cause is the Asian financial crisis, for example, is unclear.

[10] For example, the initial years of inflation targeting (approximately, 1990-1993) were in the form of inflation reduction targets in countries such as New Zealand and Canada.

[11] A plot (not shown) of inflation forecast errors for the 1990-2009 period in inflation targeting economies reveals that they are persistently positive (i.e., realized inflation is consistently below forecasted inflation) during the 1990-1998 sample. After that forecast errors are just as likely to be positive as they are negative. Also, see section 4 below.

magazine, as well as the Survey of Professional Forecasters U.S.A., and the euro area). Eight of nine central banks in the dataset provide forecasts. The Reserve Bank of Australia does not publish staff or other internal forecasts.[12] An interesting aspect of central bank forecasts is whether these are conditioned, or not, on market interest rates. A difficulty with central bank forecasts is that, in some cases (e.g., the Bank of Canada), forecasts are only available since 2005. As a result, estimates below are based on unbalanced panels. Given how average forecast disagreement is evaluated (see equation (1)) this also means that the number of forecasts that can be included varies over time. I also tried to include at least one household as well as one business survey among the survey-based forecasts. Finally, in a very few cases, I had to omit some forecasts due to the small number of available observations (see Table 2). Table 3 provides the names of the sources for all the inflation forecasts available for the econometric analysis to follow. Data limitations also mean that forecast disagreement is evaluated only for a one year ahead horizon. There are too few longer horizon forecasts to adequately estimate other versions of equation (2).

Table 3 also indicates whether the forecast is of the fixed event (i.e., a forecast for inflation for a particular calendar year) or fixed horizon (e.g., one quarter or one year ahead) variety. It is common in the literature to convert fixed event data into a fixed horizon using an admittedly *ad hoc* procedure.[13] The present study follows this convention although the impact on the results is likely small, partly because some of the econometric estimates are based on data averaged across forecasts.

[12] No particular distinction is made below between staff or policy committee forecasts. Any apparent differences may be revealed from individual estimates discussed below.

[13] Consider a monthly forecast of inflation (π) for calendar year *t*, released in month *m*. Denote such a forecast as $\pi_{m,t}^{FE}$ where FE refers to the fixed event nature of the forecast. Hence, a forecast for the fixed event one year ahead would be written $\pi_{m,t+1}^{FE}$. The transformation from FE to FH, where FH represents a fixed horizon forecast, is $\pi_{m,t}^{FH} = [(13-m)/12]\pi_{m,t}^{FE} + [(m-1)/12]\pi_{m,t+1}^{FE}$.

The remaining variables consist of macroeconomic time series that were obtained from *International Financial Statistics* CD-ROM (February 2010 edition), the BIS, and the databases of the individual central banks covered in this study.

Two other important considerations about the data require brief discussion. First, as shown in Table 3, forecasts range from the monthly through the semi-annual sampling frequencies. Monthly data are converted to the quarterly frequency through simple arithmetic averaging. Data at the semi-annual frequency are converted to quarterly data via quadratic-match averaging.[14] In the case of survey data, users face the additional burden of converting them from index form into percent changes, that is, in the form of an inflation rate. Two widely used approaches to carry out the transformation are called the regression and probability methods. The former is associated with the work of Pesaran (1985, 1987) while the latter is best known as stemming from the work of Carlson and Parkin (1975). Both techniques are used and the mean of the two resulting series serve as the proxy for inflation expectations or forecasts from the relevant survey-based data.[15] Finally, in constructing output and asset price gaps, the H-P filter with standard smoothing parameter of 1600 is employed.

4. What Explains Forecast Disagreement? Empirical Evidence

Figure 1 plots the policy rate and CPI inflation for the nine economies in the sample for the period 1999Q1-2009Q4. Also shown are the inflation target ranges for the five IT central banks. In the case of the ECB, not an IT central bank, its self-declared inflation objective of not more than 2% inflation but exceeding zero, is also highlighted.[16] The

[14] Essentially, this fits a local quadratic polynomial for each observation of the low frequency series. This polynomial is then used to fill in the missing observations at the higher frequency.

[15] As might be expected, there are pros and cons to using either technique. Smith and McAleer (1995) provide a comprehensive survey of the relevant literature. In addition, survey-based data are believed to display a bias that is not straightforward to correct as any adjustment may need to be idiosyncratic to the survey itself. For the case of Japanese data, see Ueda (2009) and references therein. While no bias corrections are made, some of the estimates presented in the following section strip out the survey-based forecasts to determine the sensitivity of the econometric results to the inclusion of this data.

[16] I refer to CPI as the measure of inflation used for all nine economies in the dataset. More precisely, however, for the euro area, it is the rate of change (annual rates) in the Harmonized Index of Consumer Prices (or HICP) which is used.

subdued nature of inflation over the sample is apparent as is the persistent deflation in the case of Japan. All the other economies, save Australia, also experience a brief bout of deflation toward the end of the sample as a result of the fallout from the global financial crisis. The impact of the events of 2007-2009 is also evident in the precipitous drop in policy rates. Note, however, that Australia is once again an exception as it is the only example where the policy rate rises near the end of the period shown. It is worth considering the behavior of asset prices as these series are not as widely available as are the others. Figure 2 shows the BIS's data for nominal asset prices and residential property prices, expressed as deviations from an H-P filtered value.[17] The data for the IT and non-IT economies are plotted separately for convenience. With the exception of Australia which experiences two large positive gaps, once in the early 2000s and again beginning around 2007, the pattern of nominal aggregate asset prices is fairly comparable across all the economies considered. The sharp drop in nominal asset prices in 2008 reflects, of course, the impact of the crisis on financial wealth. The picture is somewhat more diverse as far as property prices are concerned, as shown in the bottom portion of the same figure. Here the run-up in U.S. housing prices, as well as its subsequent collapse, is readily visible. The collapse in housing prices as a consequence of the global financial crisis appears more apparent in the IT group of countries than in the remaining economies considered. Moreover, persistent positive residential price gaps are also more in evidence in the lead up to the events of 2007-2009 among the IT set of countries. Plots of most of the remaining series used to estimate equation (2) are not shown but are available on request.

Figures 3 and 4 plot the inflation forecasts previously described (also see Table 3) followed by the forecast errors defined as the point forecast at time *t* less realized CPI inflation, also at time *t*. it is abundantly clear that there exists considerable diversity in inflation forecasts across economies and over time. Nor is it at all evident that the

[17] Deflated values of these indexes constructed from the BIS were also made available but the original dataset only goes to the end of 2007 (see Siklos 2010). It is possible to construct a real index by deflating the nominal values by a consumption expenditures price index available for all the countries in the dataset from the OECD. However, the overall patterns resemble the ones shown in Figure 2. Hence, in what follows, I use the nominal version of the asset price gap.

inflation target ranges, also shown in Figure 2, represent a constraining influence on forecasts of inflation since there are frequent departures from the stated inflation target range. In addition, such as in the case of Australia and the U.K., such departures can be persistent.[18] Figure 4 reveals a feature of the data previously noted by Granger (1996), namely that forecast errors are often positively correlated across forecasters. This appears to be true for all the economies considered. The stacked bars highlight this fact as the sign of the forecast errors is often positive or negative across most forecasts, regardless of their source. This also includes central bank forecasts.[19] Note, however, that this does not imply that all forecasts are equally accurate. An impression of the accuracy of each forecast is provided by the height of each bar.[20] Finally, it is also worth highlighting the fact that, even if the sign of forecast errors is similar across forecasts, there are frequent reversals in the sign of forecast errors for every economy considered, but most notably for Australia, Canada, Japan, and Switzerland. Therefore, this result is not the exclusive domain of IT regimes. One is tempted to conclude then that it should not be surprising that forecast errors are correlated under the

[18] In the case of Australia it needs to be emphasized (see Table 3) that the inflation target is defined rather differently than elsewhere among the IT countries in the sample. In the case of the U.K. the frequent departures from the stated IT range take place beginning in 2007, precisely around the time the Governor of the Bank of England began to write what became a series of open letters (www.bankofengland.co.uk/monetarypolicy/inflation.htm) informing the Chancellor of the Exchequer that the upper range of the inflation target had been breached. Between April 2007 and May 2010 seven such letters have been written. This certainly appears to represent casual evidence that some forecasts at least (see below) are indeed attentive to the current state of the IT regime.

[19] It was suggested that instead of mean forecasts, the median of forecasts might be preferable. Thus, for example, the median of the forecasts for the majority of the Bank of Japan's policy board are published but not the median of the entire committee. An illustration of the potential differences between the mean and the median for the case of BOJ forecasts is relegated to the appendix. However, in recent years the differences do not appear to be statistically significant. More importantly, since I am interested in the full range of forecasts using a median would exclude 'outliers' and it is not obvious that this is desirable under the circumstances, even if one were able to obtain median estimates for all of the available forecasts.

[20] A separate Table, available on request, provides the Root Mean Squared Error (RMSE) for each one of the forecasts shown in Figure 4. I also generated the test statistics for the Pesaran and Timmermann (1992) turning points test, that is, a test of the skill of forecasters at predicting changes in the direction of inflation. Relatively few forecasters display skill at predicting the timing of changes in inflation. Nevertheless, there is some evidence that Consensus forecasts, followed by OECD forecasts, display some ability to do so across the economies surveyed here and there are a few survey-based forecasts that similarly reveal an ability to forecast turning points in inflation.

circumstances and not because of any collusion among forecasters. It is equally implausible to presume that the assumptions and models used to generate forecasts are so similar as to produce the outcome shown in Figure 4. Instead, it is more likely that, at least until 2008, the benign macroeconomic environment made comparable inflation forecasts more likely. Thereafter, the sharp but predominantly global shock also led forecasts to be revised in a seemingly coordinated fashion. It must be emphasized, however, that the specifications used here are unable to identify which one of the explanations considered is the correct one.

Next, figure 5 plots various indicators of forecast disagreement defined as in equation (1). Given Granger's (1996) warning about the state of disagreement and overall economic performance recessions in the U.S., as dated by the NBER (www.nber.org/cycles.html), are super-imposed on the graphs for all the economies considered, not only in view of the potential role of U.S. forecasts on those elsewhere[21] but also because, over the period considered, none of the other economies experienced a recession (www.cepr.org/data/dating; and www.businesscycle.com/home/). The role of the global financial crisis and its attendant effects on forecast disagreement is, perhaps unsurprisingly, particularly striking in the case of the U.S., the U.K., and the euro area. Nevertheless, several of the other economies considered also experience a sharp rise in inflation forecast disagreement, such as Sweden, Switzerland and Canada. Nevertheless, attention should be drawn to the fact that some forms of disagreement (e.g., survey-based forecasts) appear more sensitive to the influence of 'bad' times than other types of forecasts (i.e., forecasts for 'common sources', namely the OECD, the IMF's WEO, and Consensus). To be sure this outcome is partly due to the original sampling frequency of the underlying forecasts (e.g., semi-annual in the case of the OECD and the WEO) and, possibly, the averaging of several forecasts (e.g., Consensus forecasts). Finally, it should be noted that while forecast disagreement displays a global element of sorts, no doubt stemming from the crisis of 2007-2009, there are also idiosyncratic elements in the evolution of forecast disagreement. For

[21] There is some evidence (not shown) of convergence, in the sense of cointegration, between forecast disagreement in the U.S., and the other economies considered. However, as the sample is brief, no too much significance ought to be attached to this result.

example, there is a sharp rise in forecast disagreement in 1998-2000 in New Zealand, as well as a sharp rise in some of the indicators of disagreement for Japan during the 2003-2006 period. In the case of New Zealand there were indications back in the late 1990s from the Reserve Bank of New Zealand (RBNZ) that monetary policy was too loose while criticisms were also raised about the RBNZ's forecasting performance. In the case of Japan the 2001-2006 period represented a time when interest rate guidance from the Monetary Policy Board was introduced and the Bank of Japan was in the throes of its quantitative easing policy (e.g., Shiratsuka (2009)).

The general overview of the data is rounded out by considering the decomposition of inflation forecasts according to factor model estimates. Three examples are illustrated in Figure 6. The top figure shows estimates of the global and domestic factors driving inflation forecasts based on data using all forecasts, regardless of the source, across all economies examined. The middle figure repeats the exercise relying only on the survey-based data while the bottom figure plots the case where only U.S. forecasts, from all sources, are considered in the factor model. What is particularly striking is that the global component, regardless of the forecast type, is highly correlated with realized inflation in each of the economies considered. The unconditional correlation coefficients range from a low of 0.32 for Sweden when the global components of inflation forecasts is obtained from U.S. data alone to a high of 0.90 between U.K.'s inflation rate and the global factor derived by using only survey-based evidence. Every single correlation pair is statistically significant at least at the 10% level of significance. In contrast, there is little, if any, correlation between the domestic element of forecasts and realized inflation. Virtually none of the unconditional correlations are statistically significant. Hence, global factors appear to play a role on explaining inflation outturns, at least over the period examined in this study.

I now turn to the econometric results. These are shown in Table 4 through 6. Tables 4 and 5 present the quantile and mean regressions estimated for each economy individually while Table 6 gives the evidence based on a panel regression estimate via GMM. Examination of the forecast disagreement data (see Figure 6) suggests that the

distribution is typically skewed to the right. This is less true of realized inflation.[22] Hence, a mean regression may not be the most meaningful way of estimating the role of the various hypothesized determinants of forecast disagreement. Nevertheless, for the sake of comparison, estimates from a conventional regression are shown in Table 5. Quantile regression results are shown for the first and third quartiles, as well as the median. To conserve space shown only are cases where global and domestic components of inflation forecasts are based on all the available forecasts. As will be seen below for the panel regression estimates forecast type matters for some of the determinants of forecast disagreement considered.

Transparency is found to increase forecast disagreement in all economies with the notable exception of the euro area where transparency has statistically significant impact and Japan, where transparency reduces forecast disagreement though the impact is economically small.[23] The same result extends to the mean regression estimates (see Table 5) although the coefficient is now also statistically insignificant in Japan's case. Moreover, transparency affects forecast disagreement at all quantiles for Canada, Sweden, Switzerland, and the U.K., and two of the three segments of the distribution examined for Australia and Japan. There is less evidence that the distinction between global and domestic determinants of inflation forecasts influences forecast disagreement while current and past monetary performance, as proxied by realized inflation, is seen to be inversely related to forecast disagreement in five of the nine economies considered.[24] Hence, a deterioration of monetary policy performance, as proxied by realized inflation, appears to raise forecast disagreement. The latter result does not show up as clearly when the regression on the mean is examined. Perhaps equally important is the finding that different variables matter to different forecasters,

[22] Plots of the distribution of disagreement against inflation in the nine economies in the sample provide the details and a relegated to an appendix.

[23] For the U.S. the aggregate measure of central bank transparency displayed too little variation throughout the sample to be included in the specification. Specifically, there were only changes in political transparency according to the Dincer-Eichengreen index. See Siklos (2010a).

[24] Canada is one of the only exceptions with forecast disagreement more sensitive to global factors relative to the domestic component of an inflation forecast.

depending on their position in the distribution of forecast disagreement. For example, commodity price inflation does not affect forecast disagreement among forecasters located in the highest quartile but is seen to be statistically significant for the lowest quantile shown. Similarly, asset prices that deviate from an H-P filtered trend tend to influence median forecast disagreement but less so the tails of the distribution. In addition, there are considerable differences in both the size of coefficients as well as the variables that affect forecast disagreement depending on which group of forecast is permitted to explain forecast disagreement with the exception of the significance of central bank transparency.

A difficulty with the quantile and mean regressions is that the results are sensitive to the presence of serially correlated errors.[25] Additionally, it is likely that cross-correlations in forecast disagreement are not entirely accounted for by the inclusion of the global factor explaining inflation forecasts. If any of the variables are thought to be endogenous, this may create further inference problems though with the relatively small sample size used here the correction may not be straightforward.[26] Perhaps most important, the individual regressions do not provide any information about the role of the monetary policy strategy. That is, the impact of transparency is co-mingled with the role of the IT policy strategy. As a consequence, while the results in Tables 4 and 5 do reveal that different forms of information matter to different forecasters they also provide an incomplete picture of the determinants of inflation forecast disagreement.

Therefore, in Table 6, I turn to estimates of the panel regression estimated via GMM. Central bank transparency and the choice of monetary policy regimes are consistently statistically significant determinants of forecast disagreement. Central bank transparency is seen as increasing forecast disagreement in three of the five models

[25] A separate Table, available as a separate appendix available on request, provides the details for the case shown in Tables 4 and 5. A version of the model with a lagged dependent variable, and a specification in first differences was also considered. Interestingly, the mean regression shows far fewer signs of serial correlation than some of the quantile regressions.

[26] Chernozhukov and Hansen (2008) consider the estimation of quantile regressions such as the ones presented here using instrumental variables estimation. Their procedure was not implemented here.

shown. It appears that the role of transparency is sensitive to whether U.S. based forecasts are excluded when extracting the global component of an inflation forecast. Moreover, disagreement appears far more sensitive to professional forecasters' view about the inflation outlook than those extracted from survey-based estimates. The same result is obtained when the term spread is considered. A rise in the spread, ordinarily an indicator of improved future economic activity, reduces forecast disagreement but the effect is much larger among the non survey-based forecasters. Whether this has anything to do with the publicity given to monetary policy decisions is unclear. Nevertheless, Cornand and Heinemann's (2008) hypothesis linking optimal transparency according to whether agents receive signals from policy makers is germane to this result.

An economy that targets inflation experiences, other things equal, a lower level of forecast disagreement relative to the other economies considered but only when U.S. forecasts are excluded. The estimates are, unfortunately, not informative about the relative contribution of central bank forecasts, that is, whether their release is the reason behind the positive impact of IT on forecast disagreement. Data limitations pose a constraint in dealing with this question (see, however, EEF 2010).

The panel setting also reveals that the global factor in forecasts of inflation is indeed a significant determinant of forecast disagreement. Forecast disagreement rises as the global component of an inflation forecast rises. The result does not carry over to the case where U.S. only forecasts are considered in the factor model that extracts the global component of inflation forecasts. Overall, the determinants of forecast disagreement can, with the exception of the role of transparency and inflation targets, be viewed as potentially complicating the task of monetary policy, assuming that a broad consensus is deemed to be desirable when it comes to the future outlook for inflation. In contrast, the results may also be seen as supporting the notion that there is no such thing as a broadly common view of one year ahead inflation rates and this ought to provide the monetary authorities with sufficient latitude to influence inflationary expectations.

If central banks have tended to downplay the connection between asset prices and inflation the same is not true of forecasters. Even when the inflation forecasts are constrained to the survey-based group there is a rise in disagreement whenever asset prices rise faster than trend. Finally, commodity prices play a negligible role in influencing forecast disagreement but this may in part be thanks to the role played by the global component of the inflation forecast.

5. Conclusions

This study has considered the determinants of disagreement in forecasts of inflation in nine economies, five of which have an explicit inflation target. Instead of examining a single set of forecasts (e.g., Consensus or the Survey of Professional Forecasters) the paper examines a much wider array of inflation forecasts, including survey-based forecasts. In addition, in an effort to distinguish between local and external sources of forecast disagreement, a factor model is used to identify global versus the domestic components of inflation forecasts.

Four main conclusions emerge from the empirical evidence. First, domestic inflation in particular and, to a lesser extent, forecast disagreement is related to the global component of inflation forecasts. Indeed, the similarity between global factors driving inflation forecasts and realized inflation is robust to the various stratifications used in the factor model to extract the global component. Nevertheless, when it comes to explaining forecast disagreement over time it matters greatly whether the forecast is generated, for example, by professional or institutions as opposed to ones obtained by examining survey-based estimates. Therefore, the second conclusion is that there are considerable gains in expanding the circle of forecast types in empirical studies of the kind performed here. Third, the prevailing ambiguities in theories linking transparency and, by implication, forecast disagreement while controlling for other factors seems replicated in the data. Part of the difficulty no doubt stems from the fact that central bank transparency changes more slowly than does forecast disagreement. Another difficulty is that, having isolated as best as possible economies that can reasonably be classified

as belonging to two separate groups in terms of their monetary policy strategy, namely inflation versus non-inflation targeting central banks, there remain subtle but important differences in how monetary policy is practiced by each monetary authority even within each of the groups considered. More generally, however, the fourth main conclusion of the paper is that transparency, uniquely among the various determinants of forecast disagreement considered, matters a great deal. This effect is consistently found across all forecast types with the implication that more transparency always raises forecast disagreement, at least over the 1999-2009 period.

To be sure, there are a number of ways one could improve on the present study. To the extent that asymmetries might plague the relationships of interest these were omitted from the various specifications tested. Next, it would be useful to extend the analysis to consider inflation expectations at longer horizons. For example, expectations extracted from inflation indexed bonds might be helpful the results of this paper suggest that this is not enough as it is important to also consider households and businesses views about long-term price trends in a cross-section of economies. Also problematic is that the data used to construct some of the quantitative determinants of forecast are not measured in real time but are quasi-final estimates of the series in question

It is also possible that uncertainty plays a role in the evolution of forecast disagreement in a manner that is not easily measured. It should be noted, however, that since the quantile regressions provide estimates of the determinants of forecast disagreement across various locations in the distribution of forecast disagreement and, assuming that the position of various forecasts in that distribution captures some of the effects of forecast uncertainty, some of the estimates presented in this paper reveal that different forecasters focus on different variables when generating their forecasts depending on factors that are akin to a form of macroeconomic uncerainty. Finally, there is the matter of the sharp changes in forecast disagreement toward the end of the sample, a reflection of the impact of the global financial crisis. More data in future will permit an assessment of whether the relationships estimated here will hold if the period after 2007 is best characterized by a different set of estimates than the ones presented here. Indeed, the positive association between transparency and disagreement may reflect

the increased desire of forecasters to process publicly available information. In other words, a crisis may well have the effect of reducing inattention.

Ultimately, however, it is important for policy makers, and those interested in understanding what drives forecasts, to move away from an excessive emphasis on point estimates, let alone arbitrarily selected point forecasts, and instead consider the distribution of point forecasts when making judgments about the future direction of monetary policy.

REFERENCES

Acemoglu, D., V. Chernozhukov, and M. Yildiz (2007), "Learning and Disagreement in an Uncertain World", working paper, MIT, July.

Arellano, M., and S. Bond (1991), "Some Tests of Specifications for Panel Data: Monte Carlo Evidence and an Application to Employment Equations", *Review of Economic Studies* (58): 277-97.

Arellano, M., and O. Bover (1995), "Another Look at Instrumental Variables Estimation of Error Components Models", *Journal of Econometrics* (68): 29-51.

Ball, L. (2006), "Has Globalization Changed Inflation?", NBER working paper 12687.

Banternghansa, C., and M. McCracken (2009), "Forecast Disagreement Among FOMC Members", Federal Reserve Bank of St. Louis working paper 2009-059A, December.

Borio, C., and A. Filardo (2007), "Globalization and Inflation: New Cross –Country Evidence on the Global Determinants of Inflation", BIS working paper 227.

Bernanke, B. (2004), "The Great Moderation", remarks at the meetings of the Eastern Economics Association, Washington, D.C., February 20.

Bernanke, B. (2007), "Inflation Expectations and Inflation Forecasting", speech given at the Monetary Economics Workshop Summer Institute of the National Bureau of Economic Research, Cambridge, July 10.

Bernanke, B. (2008), "Outstanding Issues in the Analysis of Inflation", speech given at the Federal Reserve Bank of Atlanta's 53rd Annual Conference, Chatham, 9 June.

Bohl, M., D. Mayes, and P. Siklos (2010), "The Quality of Monetary Policy and Inflation Performance: Globalization and Its Aftermath", *Manchester School* (forthcoming).

Capistrán, C. and A. Timmermann (2008), "Disagreement and Biases in Inflation Expectations", *Journal of Money, Credit and Banking* 41 (March-April): 365-396.

Carlson, J. and M. Parkin (1975), "Inflation Expectations", *Economica* 42: 123-138.

Cornand, C. and F. Heinemann (2008), "Optimal Degree of Public Information Dissemination", *Economic Journal* 118 (April): 718-42.

Chernozhukov, V. and C. Hansen (2008), "Instrumental Variable Quantile Regression: A Robust Inference Approach", *Journal of Econometrics* 142: 379-398.

Dincer, N., and B. Eichengreen (2007), "Central Bank Transparency: Where, Why, and with What Effects?, NBER working paper 13003, March.

Dovern, J., U. Fritsche, and J. Slacalek (2009), "Disagreement Among Forecasters in G7 Countries", ECB working paper, August.

Ehrmann, M., S. Eijffinger, and M. Fratzscher (2010), "The Role of Central Bank Transparency for Guiding Private Sector Forecasts", European Central Bank working paper 1146, January.

Ellison, M., and T. Sargent (2009), "A Defense of the FOMC", presented at the 10th EABCN workshop on Uncertainty over the Business Cycle, European Central Bank, Frankfurt, March 30.

Granger, C. (1996), "Can We Improve on the Perceived Quality of Economic Forecasts?", *Journal of Applied Econometrics* 11 (September-October): 455-73.

Gurkaynak, R., B. Sack, and E. Swanson (2005), "The Excess Sensitivity of Long-Term Interest Rates: Evidence and Implications for Macroeconomic Models", *American Economic Review* (March).

Hayakawa, K. (2009), "First Difference or Forward Orthogonal Deviation – Which Transformation Should Be Used in Dynamic Panel Models? A Simulation Study", *Economic Bulletin* 29 (3: 2008-2017.

Ihrig, J., S. Kamin, D. Lindner, and J. Marquez (2007), "Some Simple Tests of the Globalization and Inflation Hypothesis", International Finance Discussion Paper 2007-891, April.

International Monetary Fund (2006), *World Economic Outlook*: *Globalization and Inflation*, April.

Koenker, R. (2005), *Quantile Regression* (Cambridge: Cambridge University Press).

Lahiri, K., and X. Sheng (2008), "Evolution of Forecast Disagreement in a Bayesian Learning Model", *Journal of Econometrics* 144: 325-340.

Leduc, S., G. Rudebusch, and J. Wiedner (2009), "Disagreement About the Inflation Outlook", Federal Reserve Bank of San Francisco *Economic Letter* 2009-31, October 5.

Maag, T., and M. Lamla (2009), "The Role of Media for Inflation Forecast Disagreement and Professional Forecasters", KOF working paper 223, April.

Mankiw, N.G., and R. Reis (2002), "Sticky Information: A Moel of Noneutrality and Structural Slumps", NBER working paper 8614, December.

Makiw, N.G., and R. Reis (2006), "Pervasive Stickiness", NBER working paper 12024, February.

Mankiw, N.G., R. Reis, and J. Wolfers (2003), "Disagreement About Inflation Expectations", NBER working paper 9796, June.

Morris, S., and H. Shin (2002), "Social Value of Public Information", *American Economic Review* 52 (5): 1521-1534.

Morris, S., and H. Shin (2005), "Central Bank Transparency and the Signal Value of Prices", *Brookings Papers on Economic Activity* (2): 1-66.

Pesaran, H. (1984), “Formation of Inflation Expectations in British Manufacturing Industries” *Economic Journal* 95: 948-975.

Pesaran, H. (1987), *The Limits to Rational Expectations* (Basil Blackwell: Oxford).

Pesaran, H., and A. Timmermann (1992), “A Simple Nonparametric Test of Predictive Performance”, *Journal of Business and Economic Statistics* 10: 461-465.

Roodman, D. (2009), “A Note of the Theme of Too many Intsruments”, *Oxford Bulletin of Economics and Statistics* 71(1): 135-158.

Shiratsuka, S. (2009), “Size and Composition of Central Bank Balance Sheet: Revisiting Japan’s Experience of the Quantitative Easing Policy”, IMES working paper 2009-E-25, November.

Siklos, P.L. (2010a), “Central Bank Transparency: Another Look”, *Applied Economics Letters* (forthcoming).

Siklos, P. (2010), “Relative Price Shocks, Inflation Expectations, and the Role of Monetary Policy”, in R. Fry, C. Jones and C. Kent (Eds.), *Inflation in a Era of Relative Price Shocks* (Sydney: Reserve Bank of Australia), pp. 259-297.

Siklos, P. (2009), “As Good As It Gets? The International Dimension to Canada’s Monetary Policy Strategy Choices”, reprinted in D. Laidler (Ed.), *Securing Monetary Stability: Canada’s Monetary Policy Regime After 2011* (Toronto: C.D. Howe Institute), pp. 59-90.

Sims, C. (2006), “Rational Inattention: Beyond the Linear Quadratic Case”, *American Economic Review* 96(2): 158-63.

Smith, J., and M. McAleer (1995), “Alternative Procedures for Converting Qualitative Data Response Data to Quantitative Expectations: An Application to Australian Manufacturing”, *Journal of Applied Econometrics* 10 (Apr.-Jun.): 165-85.

Staiger, D., and J. Stock (1997), “Instrumental Variables Regression with Weak Instruments”, *Econometrica* (65): 557-86.

Stock, J., and M. Watson (2007), “Why Has U.S. Inflation Become Harder to Forecast?”, *Journal of Money, Credit and Banking* 39 (S1): 3-33.

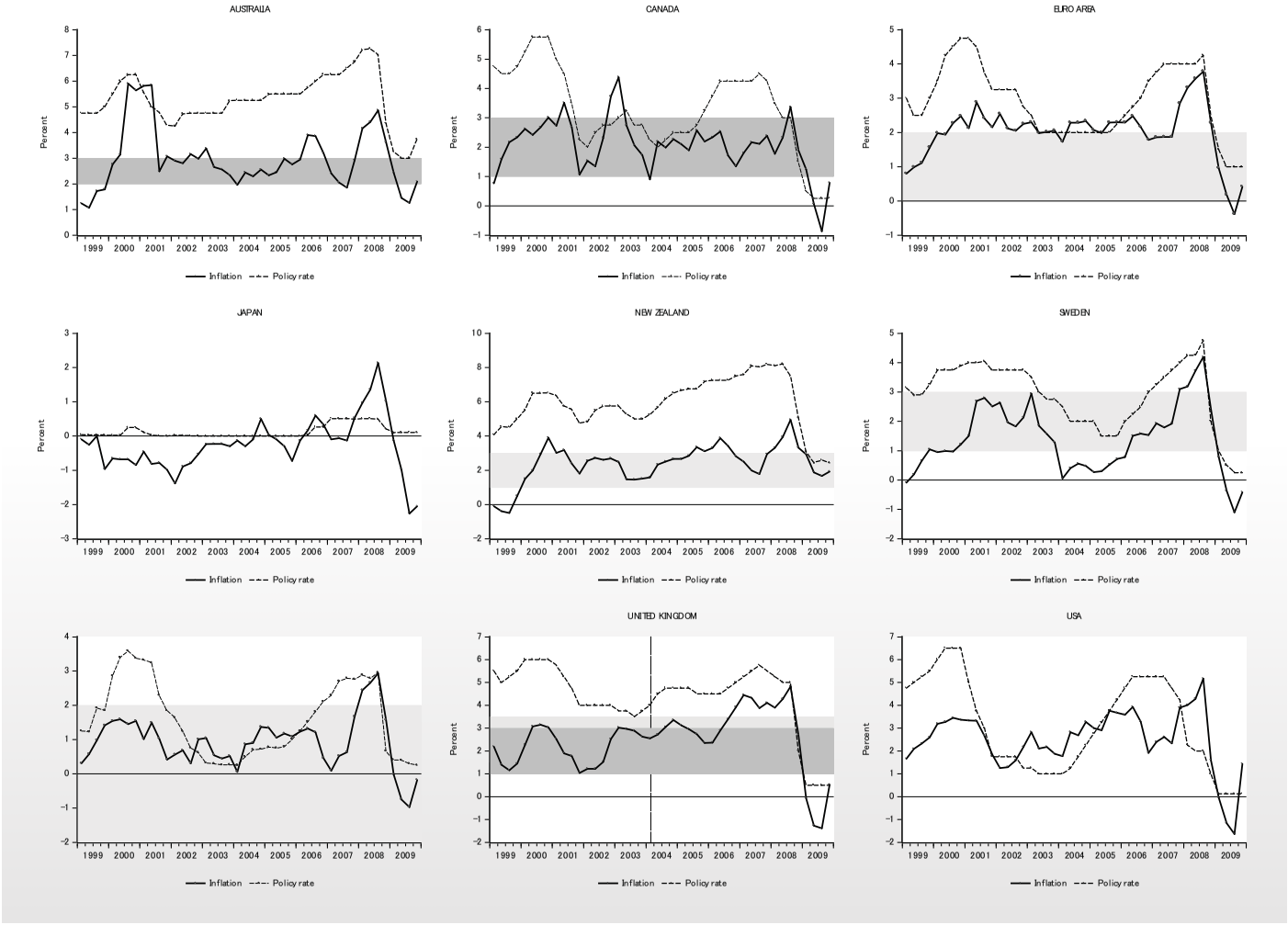
Svensson, L. (2006), “Social Value of Public Information: Comment – Morris and Shin is Actually Pro-Transparency, Not Con”, *American Economic Review* 96(1): 448-452.

van der Cruijsen, C., and M. Demertzis (2007), “The Impact of Central Bank Transparency on Inflation Expectations”, *European Journal of Political Economy* 23 (March): 51-66.

Ueda, K. (2009), “Determinants of Households’ Inflation Expectations”, IMES working paper 2009-E-8.

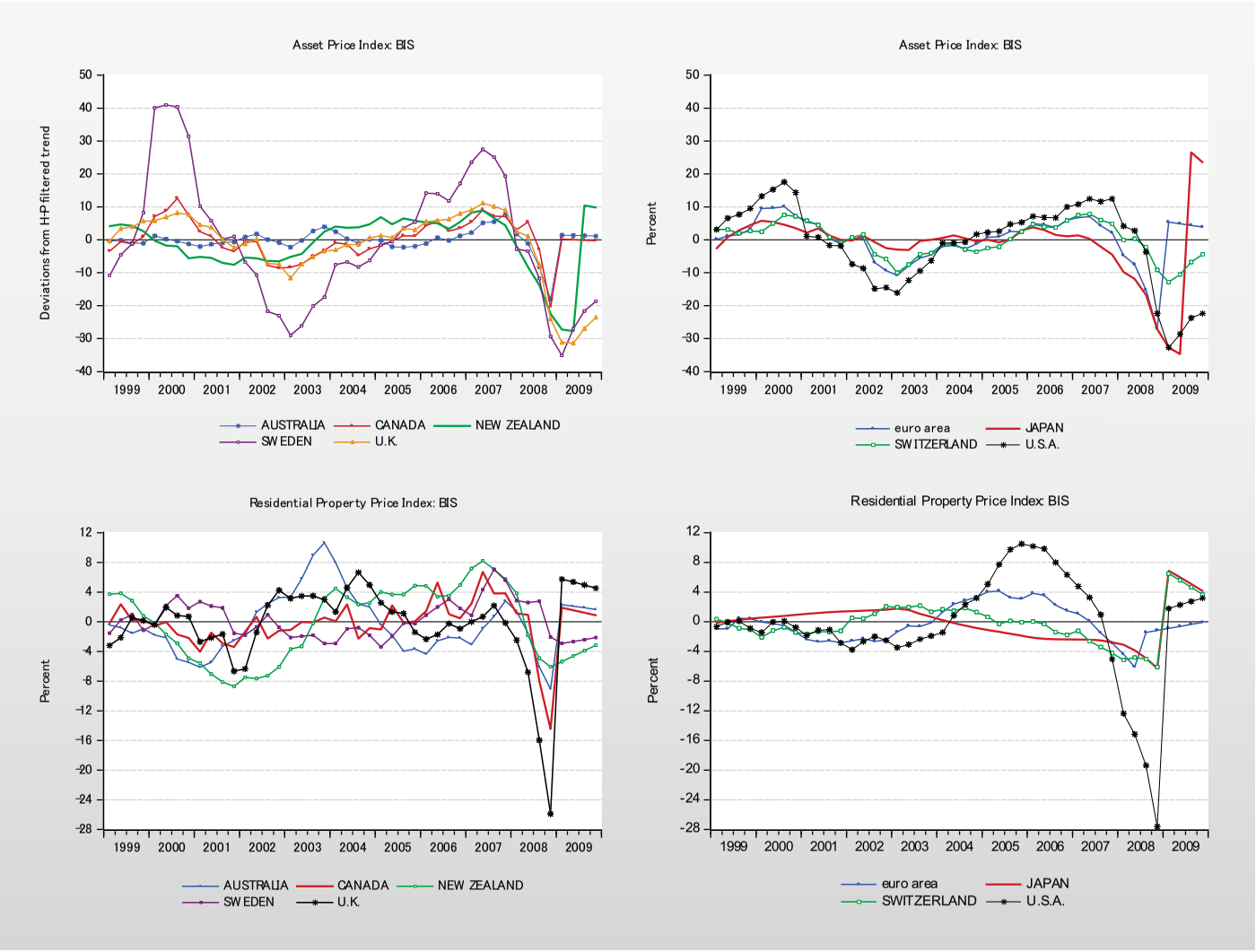
Walsh, C. (2007), “Optimal Economic Transparency”, *International Journal of Central Banking* (March): 5-36.

Figure 1 – Inflation and Policy Rates, 1999-2009



Note: The vertical line for the U.K. indicates when the remit of the Bank of England was changed to the 1-3% inflation range. For Australia, the jump in inflation in 2000-2001 reflects the introduction of the G.S.T. No special adjustments were made for this event. Inflation is the annual rate of change in the CPI.

Figure 2 – Asset Price Inflation, 1999-2009

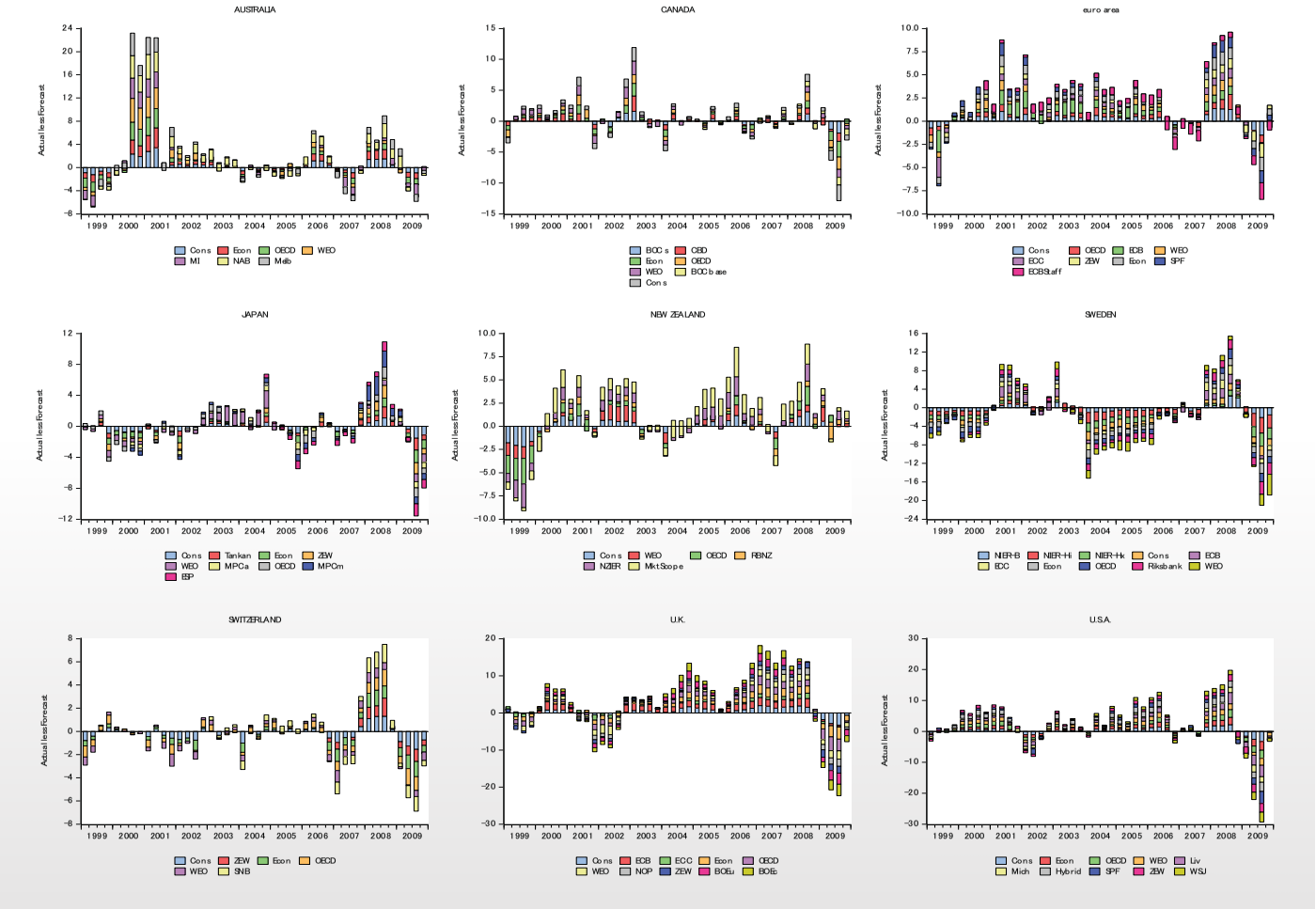


Note: An H-P filter was applied to the log levels of the data with a smoothing parameter of 1600.

Figure 3 – Inflation Forecasts and Expectations, 1999-2009

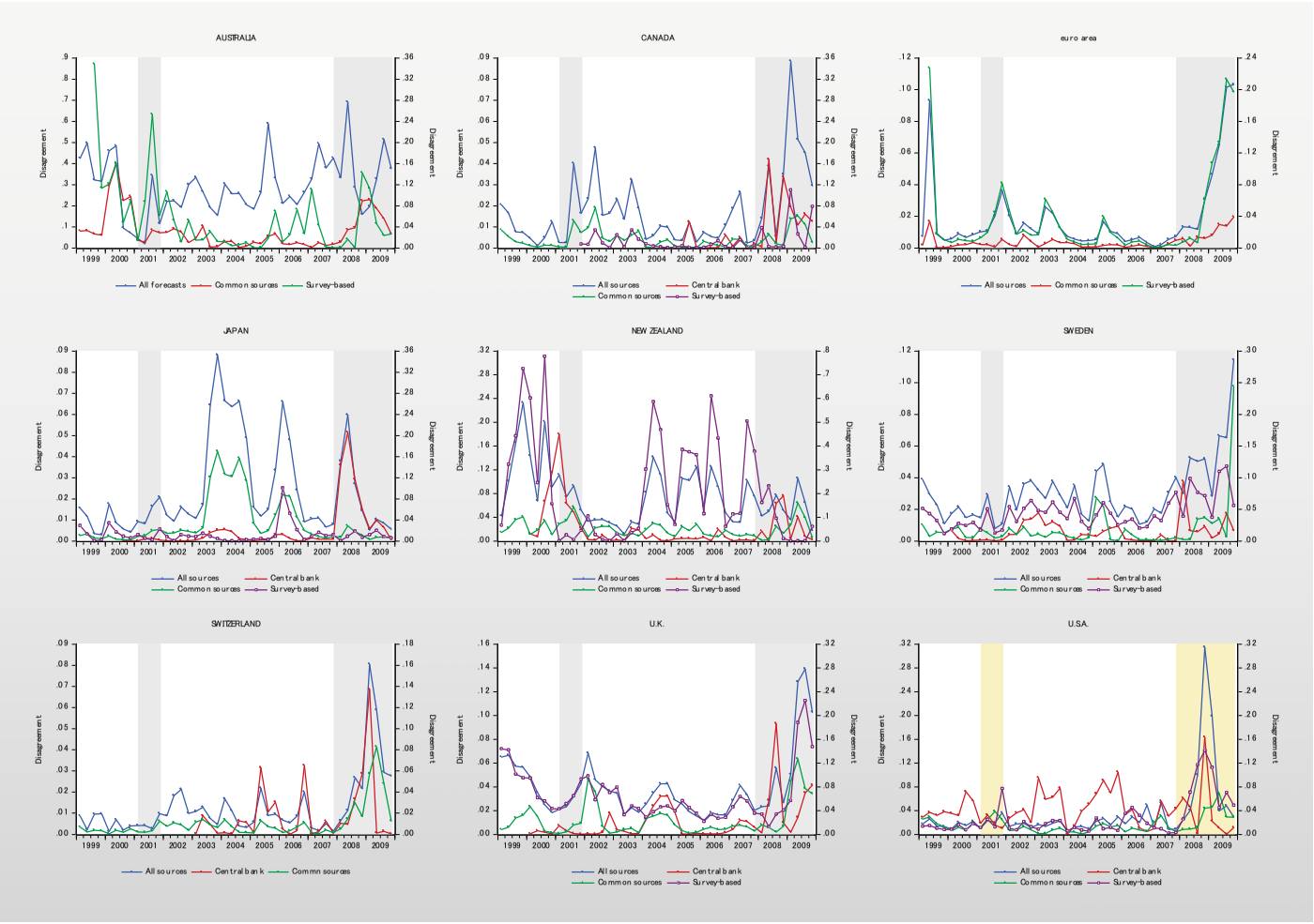
Note: see note to Figure 1, Table 2, and the appendix for data sources and definitions.

Figure 4 – Forecast Errors, 1999-2009



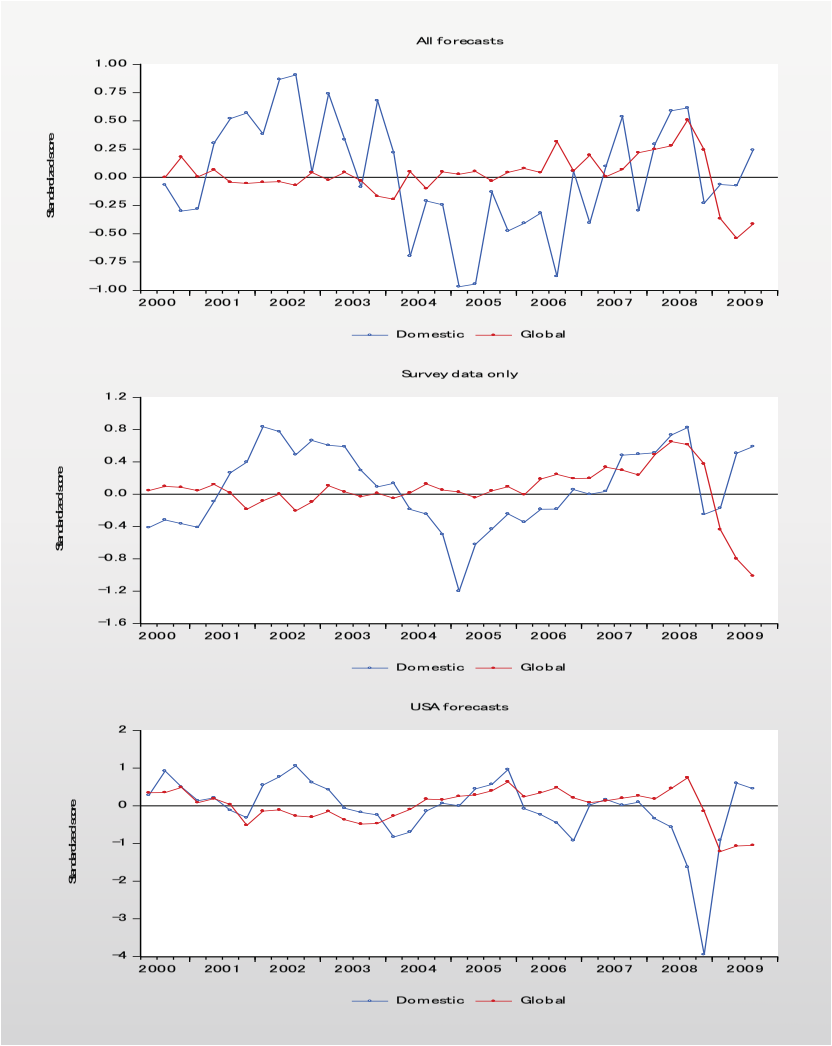
Note: The forecast errors is $\pi_{t+1}^{FH} - \pi_t$, where the first term is the one year ahead fixed horizon (FH) forecast and the second term is realized inflation. Also see Figure 1. The errors are 'stacked' one on top of the others.

Figure 5 – Forecast Disagreement, 1999-2009



Note: Calculated as in equation (1), on a quarterly basis.

Figure 6 – Domestic and Global Components of Forecasts



Note: Based on factor model estimates (equation (3)). The headings provide information about what variables were included in generating the factor model estimates.

Table 1– Monetary Policy Strategies in the Sample of Economies Investigated, 1999-2009

Economy	Type of Monetary Policy Strategy	Details
AUSTRALIA	Inflation targeting	2-3%; on average, over the cycle, CPI inflation
	Inflation targeting	1-3%, target mid-point of band, CPI inflation
Euro area	Price stability	2% or less (but positive), euro area-wide CPI inflation
JAPAN	Price stability	Price stability is the principal aim but no stated value
NEW ZEALAND	Inflation targeting	1-3%, target mid-point of band over the medium-term, CPI inflation
SWEDEN	Inflation Targeting	1-3% target mid-point of band, CPI inflation
SWITZERLAND	Price stability	2% medium-term CPI inflation forecast. Price stability is 2%, or less, CPI inflation
U.K.	Inflation targeting	1-3% (1.5-3.5% until 2004), CPI inflation
U.S.A.	Dual objective	Price stability (no stated number) and full employment

Sources: central bank websites. See www.bis.org/cbanks.htm.

Table 2 – Numbers of Forecasts and Forecast Types

Economy	Total	Survey type	Central Bank	Disagreement
AUSTRALIA	7	1	0	6
CANADA	7	1	1*	7
Euro area	9	3	1	9
JAPAN	10	4	2**	9
NEW ZEALAND	6	1	1	6
SWEDEN	10	5	1	10
SWITZERLAND	6	1	1	5
U.K.	11	5	2$	10
U.S.A.	11	3	1@	9

NOTES: * Bank of Canada's baseline forecast; ** Two versions of BoJ monetary policy committee forecast; $ BoE unconditional and conditional forecasts; @ Greenbook and FOMC forecasts are spliced together to form a 'hybrid' forecast. Disagreement refers to the number of forecasts from each economy included in the econometric testing.

Source: See data appendix.

Table 3 – Forecasts, Forecast Frequency, and Horizon Type Used in the Empirical Analysis

AUSTRALIA	CANADA	Euro area	JAPAN	NEW ZEALAND	SWEDEN	SWITZERLAND	U.K.	U.S.A.
Consensus FE/m	Consensus FE/sa	Consensus FE/m	Consensus FE/m	Consensus FE/m	Consensus FE/m	Consensus FE/m	Consensus FE/m	Consensus FE/m
OECD FE/sa	OECD FE/sa	OECD FE/sa	OECD FE/sa	OECD FE/sa	OECD FE/sa	OECD FE/sa	OECD FE/s	OECD FE/sa
WEO FE/sa	WEO FE/sa	WEO FE/sa	WEO FE	WEO FE	WEO FE	WEO FE	WEO FE	WEO FE
Economist FE/m	Economist FE/m	Economist FE/m	Economist FE/m	Economist FE/m	Economist FE/m	Economist FE/m	Economist FE/m	Economist FE/m
Nat'l Australia Bank FE/q	Conference Board FE/q	European Commission survey X 2 FH/m	BOJ X 2 FE/sa	RBNZ X 2 FH/q	European Commission X2 FH/m	Swiss National Bank/q	European Commission X2 FH/m	Michigan – survey FE/m
Melbourne Institute X2 FH/q	Bank of Canada – baseline FE/q	ZEW – Survey FH/m	Tankan – survey FH/m	NZIER FE/q	NIER X 3 FH/m	ZEW – Survey FH/m	ZEW – survey FH/m	Livingston – survey FE/sa
	Bank of Canada – survey	SPF FE/q	ZEW –survey FH/m		Riksbank FE/q		BoE X 2 FH/q	SPF FE/q

FH/q						
ECB Staff Projections FE/q	Bank of Japan Household survey FE/q				NOP FH/q	ZEW – survey FH/m
	Economic Planning Association CPI forecasts FE/m				YOUGOV FH/q	FOMC FE/sa
						Greenbook FE/q
						WSJ FH/q
						ZEW – survey FH/m

NOTE: FE means a fixed event forecast; FH signifies and fixed horizon forecast. q refers to quarterly; m is monthly, and sa is semi-annual. Additional details and definitions are contained in the data appendix.
Source: See data appendix.

Table 4 – Quantile Regressions of the Determinants of Forecast Disagreement, 1999-2009

Dependent Variable: Forecast disagreement (equation (1))												
Economy	Quantile = 0.25				Quantile= 0.5				Quantile = 0.75			
AUSTRALIA	*Variable*	*Coefft*	*t-Stat*	*Prob.*	*Variable*	*Coeff*	*t-Stat*	*Prob.*	*Variable*	*Coeff*	*t-Stat*	*Prob.*
	constant	-2.73	-0.83	0.41	constant	-4.33	-1.30	0.20	constant	-1.59	-0.48	0.63
	Inflation	**-0.24**	**-2.31**	**0.03**	**Inflation**	**-0.21**	**-1.76**	**0.09**	Inflation	-0.14	-0.94	0.35
	Domestic	-0.12	-0.86	0.39	Domestic	-0.05	-0.31	0.76	Domestic	-0.07	-0.31	0.76
	Global	0.33	0.37	0.71	Global	1.26	1.67	0.11	Global	-0.12	-0.13	0.90
	Commodity prices	**-0.01**	**-2.77**	**0.01**	**Commodity prices**	**-0.01**	**-1.96**	**0.06**	Commodity prices	-0.00	-0.35	0.73
	Output gap	0.20	0.85	0.41	Output gap	-0.18	-0.72	0.48	Output gap	-0.20	-0.78	0.44
	Asset price gap	0.01	0.42	0.68	**Asset price gap**	**0.05**	**1.81**	**0.08**	Asset price gap	0.04	1.53	0.13
	SPREAD	**-0.39**	**-3.01**	**0.01**	**SPREAD**	**-0.41**	**-2.56**	**0.02**	SPREAD	-0.39	-1.65	0.11
	Transparency	**0.63**	**2.10**	**0.04**	**Transparency**	**0.78**	**2.61**	**0.01**	Transparency	0.53	1.63	0.11
	Ps. R-squared			0.60	Ps. R squared			0.55	Ps. R-squared			0.47
	Adj R- squared			0.48	Adj R-squared			0.42	Adj R-squared			0.35
	S.E. of regression			0.49	S.E. of regression			0.38	S.E. of regression			0.55
CANADA	**constant**	**-3.21**	**-3.00**	**0.01**	constant	**-2.47**	**-2.47**	**0.02**	**constant**	**-2.75**	**-2.33**	**0.03**
	Inflation	**0.06**	**1.91**	**0.07**	Inflation	0.06	1.59	0.12	Inflation	-0.01	-0.37	0.71
	Domestic	**0.10**	**2.30**	**0.03**	**Domestic**	**0.08**	**1.83**	**0.08**	Domestic	**0.15**	**3.53**	**0.00**
	Global	**0.27**	**1.92**	**0.07**	Global	0.18	1.07	0.29	Global	0.05	0.19	0.85
	Commodity prices	**-0.00**	**-4.49**	**0.00**	**Commodity prices**	**-0.00**	**-3.60**	**0.00**	Commodity prices	-0.00	-1.45	0.16
	Output gap	0.02	0.65	0.52	Output gap	0.03	0.78	0.44	Output gap	0.01	0.23	0.82
	Asset price gap	0.00	0.97	0.34	Asset price gap	0.00	0.51	0.61	Asset price gap	-0.00	-0.02	0.98
	SPREAD	0.03	1.31	0.20	SPREAD	0.01	0.59	0.56				

	Transparency	**0.30**	**3.09**	**0.00**	**Transparency**	**0.23**	**2.60**	**0.01**	SPREAD	-0.02	-0.85	0.40
	Ps. R-squared			0.43	Ps. R-squared			0.43	**Transparency**	**0.28**	**2.63**	**0.01**
	Adj R-squared			0.26	Adj R-squared			0.27	Ps. R squared			0.53
	S.E. of regression			0.09	S.E. of regression			0.09	Adj R-squared			0.39
									S.E. ofregression			0.10
Euro Area	constant	0.15	0.19	0.85	constant	0.04	0.09	0.93	constant	-0.39	-0.81	0.43
	Inflation	0.02	0.12	0.90	**Inflation**	0.00	0.01	0.99	Inflation	-0.04	-0.27	0.79
	Domestic	-0.01	-0.15	0.88	Domestic	-0.01	-0.26	0.79	Domestic	-0.02	-0.18	0.86
	Global	0.02	0.06	0.95	Global	0.02	0.06	0.95	Global	-0.19	-0.23	0.82
	Commodity prices	-0.00	-0.44	0.67	Commodity prices	-0.00	-0.66	0.51	Commodity prices	-0.00	-1.18	0.25
	Output gap	0.04	0.37	0.71	**Output gap**	**0.06**	**1.82**	**0.08**	Output gap	**0.17**	**2.07**	**0.05**
	Asset price gap	-0.01	-0.80	0.43	Asset price gap	**-0.01**	**-2.07**	**0.05**	Asset price gap	-0.00	-0.30	0.76
	SPREAD	0.00	0.06	0.95	SPREAD	-0.01	-0.14	0.89	SPREAD	0.18	0.72	0.48
	Transparency	-0.01	-0.19	0.85	Transparency	0.01	0.29	0.77	Transparency	0.05	0.81	0.42
	Ps. R-squared			0.30	Ps. R-squared			0.30	Ps. R-squared			0.39
	Adj. R-squared			0.10	Adj R-squared			0.10	Adj R-squared			0.21
	S.E. of regression			0.15	S.E. of regression			0.16	S.E. of regression			0.15
JAPAN	constant	0.05	0.10	0.92	**constant**	**1.08**	**2.69**	**0.01**	**constant**	**1.14**	**3.11**	**0.00**
	Inflation	0.04	0.45	0.66	**Inflation**	**0.10**	**1.70**	**0.10**	Inflation	0.06	1.04	0.31
	Domestic	0.04	0.72	0.48	Domestic	0.00	0.03	0.98	Domestic	-0.01	-0.25	0.81
	Global	-0.15	-0.58	0.57	**Global**	**-0.31**	**-1.79**	**0.08**	Global	-0.20	-1.15	0.26
	Commodity prices	-0.00	-0.05	0.96	Commodity prices	-0.00	-0.54	0.59	**Commodity prices**	-0.00	-0.53	0.60
	Output gap	0.00	0.02	0.98	Output gap	0.00	0.19	0.85	Output gap	0.01	0.55	0.59
	Asset price gap	0.00	0.36	0.73	Asset price gap	0.00	1.10	0.28	Asset price gap	0.00	0.75	0.46
	SPREAD	-0.06	-0.47	0.65	**SPREAD**	-0.10	-1.31	0.20	SPREAD	-0.07	-0.88	0.39
	Transparency	0.02	0.53	0.60	**Transparency**	**-0.07**	**-1.80**	**0.08**	**Transparency**	**-0.08**	**-2.19**	**0.04**
					Ps. R-squared			0.26				

	Ps. R-squared			0.32	Adj R-squared			0.04	Ps. R-squared			0.48
	Adj R-squared			0.12	S.E. of regression			0.08	Adj R-squared			0.33
	S.E. of regression			0.11					S.E. of regression			0.11
NEW ZEALAND	constant	-9.72	-1.13	0.27	constant	-12.43	-1.38	0.18	**constant**	**-9.78**	**-2.21**	**0.04**
	Inflation	-0.03	-0.14	0.89	Inflation	-0.16	-1.03	0.31	Inflation	-0.11	-0.67	0.51
	Domestic	-0.24	-1.19	0.25	**Domestic**	**-0.45**	**-2.21**	**0.04**	Domestic	-0.17	-0.76	0.45
	Global	-1.35	-1.43	0.16	Global	-0.75	-1.16	0.26	Global	-0.55	-0.87	0.39
	Commodity prices	0.00	0.31	0.76	Commodity prices	0.00	0.09	0.93	Commodity prices	0.00	1.03	0.31
	Output gap	0.05	0.36	0.72	Output gap	0.15	1.32	0.20	Output gap	0.14	1.27	0.22
	Asset price gap	0.00	0.29	0.77	Asset price gap	-0.00	-0.09	0.93	Asset price gap	-0.00	-0.28	0.78
	SPREAD	**-0.31**	**-2.17**	**0.04**	SPREAD	-0.19	-1.49	0.15	SPREAD	-0.05	-0.26	0.79
	Transparency	0.85	1.39	0.18	Transparency	1.08	1.67	0.11	**Transparency**	**0.90**	**2.93**	**0.01**
	Ps. R-squared			0.60	Ps. R-squared			0.48	Ps. R-squared			0.48
	Adj R-squared			0.48	Adj R-squared			0.34	Adj R-squared			0.34
	S.E. of regression			0.37	S.E. of regression			0.33	S.E. of regression			0.44

SWEDEN	constant	-0.10	-0.46	0.65	constant	-0.13	-0.58	0.57	constant	0.06	0.21	0.84
	Inflation	0.00	0.10	0.92	Inflation	0.01	0.21	0.84	Inflation	-0.03	-0.47	0.64
	Domestic	0.02	0.28	0.78	Domestic	-0.02	-0.23	0.82	Domestic	0.01	0.09	0.93
	Global	0.01	0.02	0.98	Global	-0.20	-0.71	0.48	Global	-0.12	-0.57	0.57
	Commodity prices	-0.00	-0.90	0.38	Commodity prices	-0.00	-1.13	0.27	Commodity prices	-0.00	-1.39	0.17
	Output gap	-0.02	-0.57	0.57	Output gap	0.00	0.02	0.98	Output gap	0.02	0.80	0.43
	Asset price gap	0.00	0.72	0.48	Asset price gap	0.00	0.26	0.80	Asset price gap	-0.00	-0.72	0.48
	SPREAD	-0.06	-1.53	0.14	SPREAD	-0.06	-1.65	0.11	**SPREAD**	**-0.10**	**-2.24**	**0.03**
	Transparency	**0.03**	**2.00**	**0.06**	**Transparency**	**0.03**	**2.40**	**0.02**	**Transparency**	**0.03**	**1.95**	**0.06**
	Ps. R-squared			0.46	Ps. R-squared			0.45	Pseudo R-squared			0.55
	Adj R-squared			0.31	Adj R-squared			0.30	Adjusted R-squared			0.42
	S.E. of regression			0.08	S.E. of regression			0.07	S.E. of regression			0.08
SWITZERLAND	**constant**	**-0.52**	**-2.60**	**0.01**	**constant**	**-0.49**	**-2.68**	**0.01**	**constant**	**-0.58**	**-3.25**	**0.00**
	Inflation	-0.02	-0.61	0.55	Inflation	-0.04	-1.00	0.32	Inflation	0.01	0.30	0.76
	Domestic	0.00	0.08	0.94	Domestic	0.02	0.54	0.59	Domestic	0.04	1.54	0.14
	Global	0.01	0.09	0.93	Global	0.04	0.39	0.70	Global	-0.13	-1.35	0.19
	Commodity prices	-0.00	-1.05	0.30	Commodity prices	-0.00	-0.83	0.42	Commodity prices	-0.00	-1.12	0.27
	Output gap	**0.07**	**2.34**	**0.03**	**Output gap**	**0.07**	**2.59**	**0.01**	**Output gap**	**0.05**	**2.18**	**0.04**
	Asset price gap	**-0.02**	**-3.64**	**0.00**	**Asset price gap**	**-0.01**	**-3.34**	**0.00**	Asset price gap	-0.01	-1.56	0.13
	SPREAD	-0.02	-1.01	0.32	SPREAD	-0.02	-0.84	0.41	SPREAD	-0.04	-1.38	0.18
	Transparency	**0.07**	**3.18**	**0.00**	**Transparency**	**0.07**	**3.50**	**0.00**	**Transparency**	**0.09**	**5.05**	**0.00**
	Ps. R-squared			0.41	Ps. R-squared			0.52	Ps. R-squared	0.68		
	Adj R-squared			0.24	Adj R-squared			0.38	Adj R-squared	0.59		
	S.E. of regression			0.05	S.E. of regression			0.04	S.E. of regression	0.06		
	constant	**-14.80**	**-2.40**	**0.02**	constant	-16.59	-1.83	0.08	constant	-13.22	-1.73	0.09

U.K.	Inflation	-0.03	-1.66	0.11	**Inflation**	**-0.05**	**-1.95**	**0.06**	**Inflation**	**-0.06**	**-2.01**	**0.05**
	Domestic	0.01	0.34	0.73	Domestic	-0.02	-0.58	0.57	Domestic	-0.02	-0.55	0.59
	Global	0.09	0.47	0.64	Global	-0.10	-0.62	0.54	Global	-0.05	-0.40	0.69
	Commodity prices	**-0.00**	**-2.07**	**0.05**	Commodity prices	-0.00	-1.36	0.18	Commodity prices	-0.00	-1.64	0.11
	Output gap	**0.12**	**5.55**	**0.00**	**Output gap**	**0.17**	**6.25**	**0.00**	**Output gap**	**0.18**	**7.32**	**0.00**
	Asset price gap	**-0.01**	**-3.95**	**0.00**	**Asset price gap**	**-0.01**	**-4.91**	**0.00**	**Asset price gap**	**-0.01**	**-3.26**	**0.00**
	SPREAD	-0.02	-1.25	0.22	SPREAD	-0.03	-0.89	0.38	**SPREAD**	-0.03	-0.48	0.63
	Transparency	**1.21**	**2.45**	**0.02**	**Transparency**	**1.36**	**1.87**	**0.07**	**Transparency**	**1.10**	**1.80**	**0.08**
	Ps. R-squared			0.64	Ps. R-squared			0.65	Ps. R-squared			0.71
	Adj R-squared			0.54	Adj R-squared			0.55	Adj R-squared			0.63
	S.E. of regression			0.09	S.E. of regression			0.06	S.E. of regression			0.08
U.S.A.	constant	0.46	1.10	0.28	**constant**	**0.87**	**3.47**	**0.00**	**constant**	**1.15**	**4.82**	**0.00**
	Inflation	-0.07	-0.50	0.62	**Inflation**	**-0.16**	**-1.71**	**0.10**	**Inflation**	**-0.23**	**-2.52**	**0.02**
	Domestic	-0.12	-0.89	0.38	Domestic	0.04	0.37	0.72	Domestic	-0.02	-0.17	0.87
	Global	-0.03	-0.05	0.96	Global	-0.03	-0.07	0.95	Global	0.68	1.02	0.32
	Commodity prices	-0.00	-0.53	0.60	Commodity prices	0.00	0.37	0.71	Commodity prices	0.00	0.26	0.80
	Output gap	0.07	0.24	0.81	**Output gap**	**0.35**	**3.07**	**0.00**	**Output gap**	**0.38**	**3.59**	**0.00**
	Asset price gap	-0.01	-0.27	0.79	**Asset price gap**	**-0.03**	**-2.83**	**0.01**	**Asset price gap**	**-0.03**	**-3.43**	**0.00**
	SPREAD	-0.05	-0.68	0.50	SPREAD	-0.10	-1.65	0.11	SPREAD	-0.08	-1.28	0.21
	Ps. R-squared			0.11	Pseudo R-squared			0.33	Pseudo R-squared			0.50
	Adj R-squared			0.11	Adjusted R-squared			0.17	Adjusted R-squared			0.38
	S.E. of regression			0.34	S.E. of regression			0.22	S.E. of regression			0.27

Notes: Bootstrap standard errors are shown. Coefficient derived based on Epanechnikov kernel estimation. Coefficients that are statistically significant at least at the 10% level of significance are in **bold.**

Table 5 – OLS Regressions of the Mean Determinants of Forecast Disagreement, 1999-2009

Economy	Dependent variable: Forecast disagreement (squared deviation form)		
AUSTRALIA	*Variable*	*Coeff*	*t-Stat*	*Prob.*
	Constant	**-6.49**	**-2.27**	**0.03**
	Inflation	-0.08	-0.80	0.43
	Domestic	-0.20	-1.31	0.20
	Global	0.75	1.29	0.21
	Commodity prices	**-0.01**	**-2.98**	**0.01**
	Output gap	-0.07	-0.47	0.64
	Asset price gap	**0.05**	**2.29**	**0.03**
	SPREAD	**-0.34**	**-2.49**	**0.02**
	Transparency	**0.96**	**3.79**	**0.00**
	R-squared			*0.727866*
	Adjusted R-squared			*0.650113*
	S.E. of regression			*0.357053*
	Sum squared resid			*3.569632*
	Log likelihood			*-9.239300*
	F-statistic			*9.361305*
	Prob(F-statistic)			*0.000003*
CANADA				
	Constant	**-2.39**	**-3.19**	**0.00**
	Inflation	0.01	0.60	0.55
	Domestic	**0.10**	**3.63**	**0.00**
	Global	**0.21**	**1.72**	**0.10**
	Commodity prices	**-0.00**	**-4.11**	**0.00**
	Output gap	0.01	0.44	0.66
	Asset price gap	0.00	1.09	0.28
	SPREAD	0.01	0.38	0.71
	Transparency	**0.23**	**3.54**	**0.00**
	R-squared			*0.63*
	Adjusted R-squared			*0.53*
	S.E. of regression			*0.07*

	Sum squared resid			*0.13*
	Log likelihood			*51.66*
	F-statistic			*6.01*
	Prob(F-statistic)			*0.00*
Euro Area				
	Constant	-0.16	-0.40	0.69
	Inflation	-0.04	-0.70	0.49
	Domestic	-0.02	-0.32	0.75
	Global	-0.14	-0.50	0.62
	Commodity prices	**-0.00**	**-1.75**	**0.09**
	Output gap	**0.09**	**2.28**	**0.03**
	Asset price gap	-0.01	-1.64	0.11
	SPREAD	0.05	0.70	0.49
	Transparency	0.03	0.96	0.35
	R-squared			*0.43*
	Adjusted R-squared			*0.27*
	S.E. of regression			*0.11*
	Sum squared resid			*0.33*
	Log likelihood			*35.05*
	F-statistic			*2.66*
	Prob(F-statistic)			*0.03*
JAPAN				
	Constant	**0.57**	**2.70**	**0.01**
	Inflation	0.07	1.66	0.11
	Domestic	0.04	1.30	0.21
	Global	-0.21	-1.60	0.12
	Commodity prices	**0.00**	**0.46**	**0.65**
	Output gap	-0.02	-1.37	0.18
	Asset price gap	0.00	1.22	0.23
	SPREAD	**-0.11**	**-2.00**	**0.06**
	Transparency	-0.02	-0.93	0.36
	R-squared			*0.46*
	Adjusted R-squared			*0.31*
	S.E. of regression			*0.07*
	Sum squared resid			*0.14*
	Log likelihood			*50.21*
	F-statistic			*3.03*
	Prob(F-statistic)			*0.01*

NEW ZEALAND				
	Constant	**-9.35**	**-3.22**	**0.00**
	Inflation	-0.12	-1.14	0.27
	Domestic	**-0.28**	**-2.48**	**0.02**
	Global	**-0.98**	**-2.14**	**0.04**
	Commodity prices	0.00	1.07	0.29
	Output gap	0.08	1.10	0.28
	Asset price gap	0.00	0.48	0.64
	SPREAD	**-0.21**	**-2.26**	**0.03**
	Transparency	**0.85**	**4.16**	**0.00**
	R-squared			*0.74*
	Adjusted R-squared			*0.66*
	S.E. of regression			*0.29*
	Sum squared resid			*2.40*
	Log likelihood			*-1.89*
	F-statistic			*9.92*
	Prob(F-statistic)			*0.000002*
SWEDEN				
	Constant	-0.10	-0.50	0.62
	Inflation	0.01	0.54	0.59
	Domestic	-0.01	-0.41	0.69
	Global	-0.22	-1.59	0.12
	Commodity prices	**-0.00**	**-2.47**	**0.02**
	Output gap	0.01	0.74	0.46
	Asset price gap	-0.00	-0.32	0.75
	SPREAD	**-0.07**	**-2.77**	**0.01**
	Transparency	**0.03**	**2.69**	**0.01**
	R-squared			*0.69*
	Adjusted R-squared			*0.61*
	S.E. of regression			*0.06*
	Sum squared resid			*0.10*
	Log likelihood			*56.35*
	F-statistic			*7.96*
	Prob(F-statistic)			*0.00*
SWITZERLAND				
	Constant	**-0.57**	**-5.11**	**0.00**
	Inflation	-0.02	-0.92	0.37

	Domestic	0.02	0.89	0.38
	Global	-0.03	-0.43	0.67
	Commodity prices	-0.00	-1.07	0.29
	Output gap	**0.07**	**4.83**	**0.00**
	Asset price gap	**-0.01**	**-4.29**	**0.00**
	SPREAD	-0.02	-1.59	0.12
	Transparency	**0.08**	**7.16**	**0.00**
	R-squared			*0.82*
	Adjusted R-squared			*0.77*
	S.E. of regression			*0.04*
	Sum squared resid			*0.05*
	Log likelihood			*70.58*
	F-statistic			*15.80*
	Prob(F-statistic)			*0.00*
U.K.				
	Constant	**-16.82**	**-1.95**	**0.06**
	Inflation	**-0.06**	**-3.06**	**0.00**
	Domestic	-0.01	-0.63	0.54
	Global	-0.05	-0.51	0.62
	Commodity prices	**-0.00**	**-1.71**	**0.10**
	Output gap	**0.16**	**8.34**	**0.00**
	Asset price gap	**-0.01**	**-7.07**	**0.00**
	SPREAD	-0.01	-0.47	0.64
	Transparency	**1.38**	**2.00**	**0.06**
	R-squared			*0.85*
	Adjusted R-squared			*0.80*
	S.E. of regression			*0.06*
	Sum squared resid			*0.10*
	Log likelihood			*57.42*
	F-statistic			*19.54*
	Prob(F-statistic)			*0.00*
U.S.A.				
	Constant	**0.82**	**4.73**	**0.00**
	Inflation	**-0.16**	**-2.49**	**0.02**
	Domestic	-0.02	-0.26	0.80

	Global	0.35	1.08	0.29
	Commodity prices	-0.00	-0.04	0.97
	Output gap	**0.36**	**4.26**	**0.00**
	Asset price gap	**-0.03**	**-4.10**	**0.00**
	SPREAD	-0.07	-1.61	0.12
	R-squared			*0.59*
	Adjusted R-squared			*0.49*
	S.E. of regression			*0.20*
	Sum squared resid			*1.19*
	Log likelihood			*11.03*
	F-statistic			*5.95*
	Prob(F-statistic)			*0.00*

Notes: Coefficients that are statistically significant at least at the 10% level of significance are in **bold.**

Table 6 – GMM Estimates of Determinants of Forecast Disagreement, 1999-2009

Model	Estimates
I – All forecasts	

Variable	Coeff	t-Stat	Prob.
Domestic	**-2.43**	**-3.53**	**0.00**
Global	**24.17**	**2.71**	**0.01**
Inflation	**-2.83**	**-1.67**	**0.10**
IT	0.04	0.07	0.94
Transparency	**2.37**	**1.64**	**0.10**
Asset price gap	**0.51**	**3.20**	**0.00**
Output gap	0.11	0.29	0.77
SPREAD	**-7.62**	**-3.41**	**0.00**
Commodity	**-0.10**	**-5.46**	**0.00**
J-statistic	0.003	0.96	

II – All forecasts except survey-based forecasts			
Domestic	**4.42**	**3.40**	**0.00**
Global	2.88	1.29	0.20
Inflation	**-1.26**	**-2.06**	**0.04**
IT	0.29	0.85	0.40
Transparency	**1.55**	**2.26**	**0.02**
Asset price gap	**0.09**	**3.22**	**0.00**
Output gap	**-1.77**	**-3.19**	**0.00**

	SPREAD	**-2.30**	**-2.85**	**0.00**
	Commodity	0.01	0.57	0.57
	J-statistic		0.23	0.63
III – All except U.S. forecasts				
	Domestic	**-1.81**	**-5.26**	**0.00**
	Global	**8.45**	**2.10**	**0.04**
	Inflation	-1.29	-1.54	0.13
	IT	**-0.57**	**-1.64**	**0.10**
	Transparency	1.14	1.44	0.15
	Asset price gap	**0.25**	**2.97**	**0.00**
	Output gap	0.18	0.94	0.35
	SPREAD	**-4.43**	**-3.29**	**0.00**
	Commodity	**-0.04**	**-3.79**	**0.00**
	J-statistic		1.75	0.19
IV – U.S. forecasts only				
	Domestic	-5.76	-1.27	0.21
	Global	1.69	0.66	0.51
	Inflation	-3.83	-1.13	0.26
	IT	-1.01	-0.93	0.35
	Transparency	2.63	1.37	0.17
	Asset price gap	0.82	1.52	0.13

	Output gap	-0.10	-0.24	0.81
	SPREAD	-12.24	-1.59	0.11
	Commodity	-0.00	-0.05	0.96
	J-statistic		0.03	0.86
V – Survey-based forecasts only				
	Domestic	0.04	0.30	0.76
	Global	**3.04**	**2.68**	**0.01**
	Inflation	**-0.74**	**-1.79**	**0.07**
	IT	-0.32	-1.32	0.19
	Transparency	**0.82**	**1.76**	**0.08**
	Asset price gap	**0.12**	**3.90**	**0.00**
	Output gap	**0.50**	**4.02**	**0.00**
	SPREAD	**-2.73**	**-4.14**	**0.00**
	Commodity	**-0.02**	**-3.76**	**0.00**
	J-statistic		6.10	0.11

Notes: J is Sargan' test for the null that the over identifying restrictions are valid. p-values are in the next column based on the chi-square distribution where the degrees of freedom are the number of instruments less the number of regressors. Instruments are: the constant, lags of all the right hand side variables as well as one lag of the dependent variable. Only in the case of model V was a second lag of inflation and one lag of the rate of change in on-fuels commodity price inflation added to the instrument list. Orthogonal deviations were used, while the standard errors are period SURE based, and 2SLS weights are used. The models refer to the variables, for all economies *j* used in deriving the Global and Domestic component of Inflation forecasts. Coefficients that are statistically significant at least at the 10% level of significance are in **bold.**

APPENDIX – Data

A. Private Sector , Governmental or International Institutions

Economy	Forecast (Frequency[1])	Horizons[2]	START	Survey (Frequency)	Horizons[2]	START
AUSTRALIA (AUD)	*The Economist* (M)	cy, 1y	1990.08	Melbourne Institute (Q)	cy	1993Q2
	Consensus (M)	cy, 1y	1990.01	Melbourne – consumer		
	World Economic Outlook (SA)	cy, 1y	1993S1	inflationary	ya-balance[4]	1985.1
	OECD (SA)	ya	1990S1	expectations Institute (M) – consumer sentiment		
				National Australia Bank Survey	cy	1989Q2
CANADA (CAD)	*The Economist* (M)	cy, 1y	1990.08	Bank of Canada (Q) -	2y-bins	2001.2
	Consensus (M)	cy, 1y	1989.10	Survey		
	World Economic Outlook (SA)	cy, 1y	1993S1			
		cy, 1y	1990Q1			
	Conference Board of Canada (Q)	ya	1990S1			
	OECD (SA)					
EURO AREA (EUR)	*The Economist* (M)	cy, 1y	1998.11	SPF[3] (Q)	cy, 1y, 2y, 5y	1999.1
				EC Consumer	ya-balance[4]	1985.01

	Consensus (M) OECD (SA)	cy, 1y ya	1989.10 1990S1	& Business Survey (M) ZEW (M)	ya-bins[5]	1991.12
JAPAN (JAP)	*The Economist* (M)	cy, 1y	1990.08	ZEW (M)	ya-bins	1991.12
				BoJ (Q)	ya, 5y-bins	2001.2 (2004.2/5y)
	Consensus (M)	cy, 1y	1989.10			
				TANKAN	Diffusion	1985.1
	World Economic Outlook (SA) OECD (SA)	cy, 1y ya	1993S1 1990S1	ESP(M)	Index ya, distribution	2004.6
NEW ZEALAND (NZD)	Consensus (M)	cy, 1y	1990.01	RBNZ (Q) Market scope (Q)	qa, 1y, 2y ya-bins	1987.3 1987.4/1995.1
	World Economic Outlook (SA)	cy, 1y	1993S1			
	New Zealand Institute of Economic Research (Q; NZIER)	cy, ya, 2,3,4 ya	1988 1990S1			
	OECD (SA)	ya				
SWEDEN (SWE)	*The Economist* (M)	cy, 1y	1990.08	EC Consumer & Business Survey (M)	ya-balance[4]	1995.01 (1990.01)
	Consensus (M)	cy, 1y	1989.11			
	World Economic Outlook (SA) OECD (SA)	cy, 1y ya	1993S1 1990S1			
SWITZERLAND	*The Economist*	cy, 1y	1990.08	ZEW (M)	ya-bins	1991.12

(SWI)	(M)					
	Consensus (M)	cy, 1y	1989.11			
	World Economic Outlook (SA)	cy, 1y ya	1990S1			
	OECD (SA)					
UNITED KINGDOM (GBR)	*The Economist* (M)	cy, 1y	1991.01	EC Consumer & Business Survey (M)	ya-balance[4]	1985.01
	Consensus (M)	cy, 1y	1989.11	YOUGOV (M)	ya	2005.12
	World Economic Outlook (SA)	cy, 1y ya	1993S1 1993Q1 1990S1	BoE/NOP (Q)	1y-bins	2000.1
	BoE MPC (Q)					
	OECD (SA)					
UNITED STATES (USA)	*The Economist* (M)	cy, 1y	1990.08	SPF[3] (Q)	cq, qb, cy, ya, 1qa, 2qa, 3qa, 4qa, 10y	1981.3 (1991.4 for 10y)
	Consensus (M)	cy, 1y	1989.11			
	Greenbook (Q)	cy, 1q, 2q, 3q, 4q, 5q, 6q, 7q, 8q, 9q	1965.4, 1966.1, 1968.1, 1968.1, 1969.4, 1972.3, 1979.1, 1981.4, 1990.3	Michigan Survey (Q)	ya	1978.1
				Livingston Survey (SA)	cm, cy, 6m, 12m, 1y, 2y, 10y	1985S1
		cy, 1y	1993S1	ZEW (M)	ya-bins	1991.12
	World Economic Outlook (SA)	ya	1990S1			
	OECD (SA)					
	Wall Street	cy	2003S1			

Journal (SA)

Notes to part A:

1. M, Q, SA are monthly, quarterly and semi-annual, respectively.

2. Cy, 1y, ya, represent mean current year and one year ahead and year ahead, respectively. There is little substantive difference between 1y and ya other than different source use different language to refer to forecasts that pertain to the year following the publication of the forecast. In some cases, however, the forecast can refer to the calendar year ahead, or to a forecast for a calendar year ahead from the time of publication, in which case the forecast horizon may overlap the current and following calendar year. #m, #q, or #y refer to forecasts # months, quarters or years ahead.

3. Survey of Professional Forecasters.

4. Balance refers to the horizon stated applicable to the remainder (i.e., balance) of the year. Bins refers to the fact that forecasts are arranged in the form of a distribution of responses.

B. Central Bank Forecasts

Economy	Frequency/AUTHOR	Horizons	START
UNITED STATES (USA)	Semi-Annual/FOMC	Up to 9 quarters ahead	2000
CANADA *(CAD)*	Quarterly/BoC[1]	Up to 8 quarters ahead	2005
JAPAN (JAP)	Semi-Annual/BOJ	Current and 1 year ahead	2000
UNITED KINGDOM (GBR)	Quarterly/BoE	Up to 8 quarters ahead	1993, 1998 (conditional on market interest rates)
SWITZERLAND (SWI)	Quarterly/SNB	Up to 2 years ahead	2003
SWEDEN (SWE)	Quarterly/Riksbank	Up to 8 quarters ahead	2000
NEW ZEALAND (NZD)	Quarterly/RBNZ	Up to 12 quarters ahead	1997
EURO AREA (EUR)	Quarterly/ECB Staff	Up to 2 years ahead	2000[2]

Note to Part B: *1.* A mix of semi-annual and quarterly forecasts provided until 2009 when fully quarterly forecasts are available. Referred to as the Bank's baseline forecast. *2.* Until 2004, projections are semi-annual; thereafter quarterly.

C. Sources for Forecasts and Surveys

Economy	Source(s)
AUSTRALIA	http://www.melbourneinstitute.com/ http://www.consensuseconomics.com/ http://www.imf.org/external/ns/cs.aspx?id=29 http://www.economist.com/ [1] http://www.oecd.org/document/59/0,3343,en_2649_34109_42234619_1_1_1_37443,00.html
CANADA	http://www.consensuseconomics.com/ http://www.imf.org/external/ns/cs.aspx?id=29 http://www.conferenceboard.ca/ http://www.economist.com/ http://www.oecd.org/document/59/0,3343,en_2649_34109_42234619_1_1_1_37443,00.html http://www.bankofcanada.ca/en/
EURO AREA	http://www.consensuseconomics.com/ http://www.economist.com/[2] http://ec.europa.eu/economy_finance/db_indicators/surveys/time_series/index_en.htm http://www.ecb.int http://www.oecd.org/document/59/0,3343,en_2649_34109_42234619_1_1_1_37443,00.html

JAPAN	http://www.consensuseconomics.com/
	http://www.economist.com/
	http://www.imf.org/external/ns/cs.aspx?id=29
	http://www.zew.de/en/daszew/daszew.php3
	http://www.boj.or.jp/en/
	http://www.oecd.org/document/59/0,3343,en_2649_34109_42234619_1_1_1_37443,00.html
	http://www.epa.org.jp
NEW ZEALAND	http://www.consensuseconomics.com/
	http://www.rbnz.govt.nz/
	http://www.nzier.org.nz/
	http://www.oecd.org/document/59/0,3343,en_2649_34109_42234619_1_1_1_37443,00.html
SWEDEN	http://www.consensuseconomics.com/
	http://www.economist.com/
	http://ec.europa.eu/economy_finance/db_indicators/surveys/time_series/index_en.htm
	http://www.imf.org/external/ns/cs.aspx?id=29
	http://www.oecd.org/document/59/0,3343,en_2649_34109_42234619_1_1_1_37443,00.html
	http://riksbank.com/
SWITZERLAND	http://www.consensuseconomics.com/

	http://www.economist.com/ http://www.imf.org/external/ns/cs.aspx?id=29 http://www.zew.de/en/daszew/daszew.php3 http://www.oecd.org/document/59/0,3343,en_2649_34109_42234619_1_1_1_37443,00.html http://www.snb/ch
UNITED KINGDOM	http://www.consensuseconomics.com/ http://www.economist.com/ http://ec.europa.eu/economy_finance/db_indicators/surveys/time_series/index_en.htm http://www.imf.org/external/ns/cs.aspx?id=29 http://www.bankofengland.co.uk/ http://www.yougov.co.uk/corporate/archives/press-archives-fin-intro.asp?submenuheader=1 http://www.oecd.org/document/59/0,3343,en_2649_34109_42234619_1_1_1_37443,00.html
UNITED STATES	http://www.consensuseconomics.com/ http://www.economist.com/ http://www.imf.org/external/ns/cs.aspx?id=29 http://www.philadelphiafed.org/research-and-data/real-time-center/ http://www.src.isr.umich.edu/http://www.src.isr.umich.edu/ http://www.oecd.org/document/59/0,3343,en_2649_34109_42234619_1_1_1_37443,00.html

http://online.wsj.com/home-page

http://www.zew.de/en/daszew/daszew.php3

Notes to Part C:

1. For year ahead forecasts the data for January-February for each year until 2007 were added by interpolating the forecasts for the available adjacent months. This was necessary because the forecasts are for the calendar year (current or one year ahead) published each month and the table published omitted these two months.

2. For the euro area forecasts are for EUR 11 countries until 2000 December, thereafter EUR forecasts**. The same calculation applies to the Consensus forecasts.**

3. For Germany the forecasts are for greater or consolidated Germany beginning in November 1995.

D. TIME SERIES INFORMATION

Economy	Series Name	Source(s)
AUSTRALIA (AUD)	**Real GDP, CPI, Commodity prices, Real and Nominal exchange rates, Stock price index, money market rate, 3 month LIBOR rates, long-term government bond yields, Housing prices, central bank policy rate (cash rate)**	**BIS, International Financial Statistics, Australian Bureau of Statistics, Reserve Bank of Australia**
CANADA (CAD)	**Real GDP, CPI, Commodity prices, Real and Nominal exchange rates, Stock price index, overnight rate, 3 month LIBOR rates, long-term government bond yields, Housing prices, central bank policy rate (overnight rate target)**	**BIS, International Financial Statistics, Statistics Canada, Bank of Canada**
EURO AREA (EUR)	**Real GDP, CPI, Commodity prices, Real and Nominal exchange rates, Stock price index (mean of indexes for Germany, France, Italy), interbank rate, 3 month LIBOR rates, long-term government bond yields, Housing prices, central bank policy rate (main refinancing operations)**	**BIS, International Financial Statistics, European Central Bank**
JAPAN (JAP)	**Real GDP, CPI, Commodity prices, Real and Nominal exchange rates, Stock price index, 3 month LIBOR rates, long-term government bond**	**BIS, International Financial Statistics, Cabinet Office, Bank of Japan**

	yields, central bank policy rate (uncollateralized call rate)	
NEW ZEALAND (NZL)	**Real GDP, CPI, Commodity prices, Real and Nominal exchange rates, Stock price index, money market rate, 3 month LIBOR rates, long-term government bond yields, Housing prices, central bank policy rate (cash rate)**	**BIS, International Financial Statistics, Reserve Bank of New Zealand**
SWEDEN (SWE)	**Real GDP, CPI, Commodity prices, Real and Nominal exchange rates, Stock price index, STIBOR rates, long-term government bond yields, Housing prices, central bank policy rate (repo rate)**	**BIS, International Financial Statistics, Riksbank**
SWITZERLAND (SWI)	**Real GDP, CPI, Real and Nominal exchange rates, Stock price index, money market rate, 3 month LIBOR rates, long-term government bond yields, central bank policy rate (3 month LIBOR – targeted), Commodity prices**	**BIS, International Financial Statistics, Swiss National Bank**
UNITED KINGDOM (GBR)	**Real GDP, CPI, Real and Nominal exchange rates, Stock price index, overnight rate, 3 month LIBOR rates, long-term government bond yields, Housing prices, central bank policy rate (bank rate)**	**BIS, International Financial Statistics, , Nationwide, Bank of England**

UNITED STATES (USA)	**Real GDP, CPI, Commodity prices, Real and Nominal exchange rates, Stock price index, fed funds rate, 3 month LIBOR rates, long-term government bond yields, Housing prices, central bank policy rate (fed funds target)**	**BIS, International Financial Statistics, OFHEO, Bureau of Labour Statisitics, Federal Reserve**

E . Descriptors Used for Forecasts in Tables & Figures

Forecast Name	Code
The Economist	ECON
Consensus	CONS
European Commission Consumer Survey	ECC
European Commission Business Survey	ECB
European Central Bank	ECB Staff
WEO	World Economic Outlook
Conference Board of Canada	CBD
Center for European Economic Research	ZEW
Reserve Bank of New Zealand	RBNZ
Market Scope (New Zealand)	Scope
Tankan (Japan)	TANAO
Yougov Opinion Polling Survey (UK)	YOUGOV
Greenbook, US Federal Reserve	GREEN
Federal Open Market Committee (US)	FOMC
Livingston Survey (US)	LIV
Survey of Professional Forecasters (US, euro area)	SPF
Bank of England (UK)	BOE
University of Michigan Survey (US) - mean	MICH
	MIMN
National Opinion Poll (UK)	NOP
Melbourne Institute (Australia)	MLB
Bank of Japan	BOJ

Bank of Japan Monetary Policy Committee	**PBOJMAJ (Majority of Committee)** **PBOJALL (Entire Committee)**
Bank of Canada Business Survey	**BOC**
New Zealand Institute for Economic Research	**NZIER**
Riksbank (Sweden)	**RIKS**
Organization for Economic Cooperation and Development	**OECD**
Swiss National Bank	**SNB**
National Institute of Economic Research	**NIER, BNIER, CNIER**
Infitted	**Regression method conversion**
Infitted1	**Probability approach conversion**

F. Last available observation

Economy	**Forecast Source** **Last Observation (M= month; Q= Quarter; S= Semi-Annual**
AUSTRALIA	Economist: 2010M04 Consensus: 2009M12 Melbourne Cons. Sentiment: 2010M04 Melbourne Institute: 2009Q4 Nat'l AUS Bank: 2009Q4 WEO: 2009S2 OECD: 2009S2
CANADA	Economist: 2010M04 Consensus: 2009M12 Bank of Canada Survey: 2010Q1 Conference Board: 2010Q1 WEO: 2009S2 OECD: 2009S2 BoC Base case: 2010Q2
EURO AREA	Economist: 2010M04 Consensus: 2009M12 European Commission: 2010M02 ZEW: 2010M02 Survey of Prof. Forecasters: 2009Q4 WEO: 2009S2 OECD: 2009S2
JAPAN	Economist: 2010M04 Consensus: 2009M12 ZEW: 2010M02 BOJ Survey: 2010Q1 Tankan: 2009Q4 WEO: 2009S2 OECD: 2009S2 BOJ MPC: 2010S1
NEW ZEALAND	Economist: 2010M04 Consensus: 2009M12 RBNZ Survey: 2010Q1 Marketscope: 2010Q1 WEO: 2009S2

	OECD: 2009S2 RBNZ: 2010Q1
SWEDEN	Economist: 2010M04 Consensus: 2009M12 European Commission: 2010M02 NIER: 2010Q1 WEO: 2009S2 OECD: 2009S2 Riksbank: 2010Q1
SWITZERLAND	Economist: 2010M04 Consensus: 2009M12 Financial Market Report: 2010M03 WEO: 2009S2 OECD: 2009S2 SNB: 2010Q1
UNITED KINGDOM	Economist: 2010M04 Consensus: 2009M12 European Commission: 2010M02 ZEW: 2010M02 Yougov: 2010M03 NOP: 2009Q4 WEO: 2009S2 OECD: 2009S2 BoE: 2010Q1
UNITED STATES	Economist: 2010M04 Consensus: 2009M12 ZEW: 2010M02 Survey of Prof. Forecasters: 2010Q1 Livingston: 2009S2 Wall Street Journal: 2009S2 Michigan: 2009M08 WEO: 2009S2 OECD: 2009S2 Greenbook: 2003Q4 FOMC: 2010S1