



Sources of disagreement in inflation forecasts: An international empirical investigation [☆]



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ABSTRACT

Central to the conduct of monetary policy are inflation forecasts. Inflation forecasts are not unique. Central banks and professional organizations generate inflation forecasts while households are surveyed about their inflation outlook. This paper estimates inflation forecast disagreement for nine economies over the 1999–2009 period, five of which target inflation. I find that central bank transparency tends to increase forecast disagreement. To the extent this reflects the attention paid to inflation performance the implication is that transparency is beneficial. Moreover, this finding does not appear to be a feature that applies only to central banks that must adhere to an inflation target.

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1. Introduction

Inflation forecasts lie at the heart of a central bank's monetary policy strategy. A wide variety of forecasts are published and they reflect differences not only in views about the future but are based on different information sets, as well as being more or less sensitive to the regular arrival of macroeconomic news. Not surprisingly then, there exists considerable scope for forecasters to disagree. Nevertheless, [Leduc et al. \(2009\)](#) point out that the concept of forecast disagreement is frequently overlooked by observers who track aggregate economic activity. There are comparatively few attempts to measure, let alone explain, how and why forecasters disagree. Why should we be interested in inflation forecast disagreement? [Bernanke \(2008, 2007\)](#) offers an explanation when he observes that economists have yet to fully grasp the dynamics of inflation expectations. Indeed, he suggests ([Bernanke, 2007](#)) that expectations can change, "...depending on

economic developments and (most importantly) the current and past conduct of monetary policy."

The present study begins with the observation that the sensitivity of various inflation forecasts to incoming economic developments and institutional considerations can differ. Unlike similar studies which examine the range of forecasts from a single source, this paper argues that researchers should analyze a wider array of forecast types. By estimating inflation forecast disagreement based on different sources, such as professional forecasts, central bank, and survey-based forecasts, observers can determine, for example, the roles played by central bank transparency and the choice of the monetary policy strategy. Similarly, it is also useful to ask to what extent inflation forecast disagreement is driven by domestic factors as opposed to global considerations. Both are no doubt reflected in realized inflation and most central banks have come to the conclusion that international influences have played an increasingly important role over the past decade (e.g., see [International Monetary Fund, 2006](#)).

This paper estimates a model of inflation forecast disagreement, explores the role of global versus domestic determinants, assesses the influence of central bank transparency, as well as the impact of an inflation targeting policy strategy. The next section provides definitions of forecast disagreement and briefly considers the state of the theoretical debate germane to the question of what drives forecast disagreement. [Section 3](#) describes the data and outlines the econometric modeling strategy followed. Empirical results are discussed in [Section 4](#) prior to concluding remarks in [Section 5](#).

[☆] This paper was partially written while the author was a Visiting Scholar in 2010 at the Institute for Monetary and Economic Studies, Bank of Japan. Comments by Michael Ehrmann, seminar participants at the Bank of Japan and the University of Athens, Shigenori Shiratsuka, Nao Sudou, and Kozo Ueda, are gratefully acknowledged as are the comments of the Editor, and three anonymous referees. A separate Appendix A, available on request, contains additional information 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.

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Briefly, the paper finds that central bank transparency is associated with an increase in forecast disagreement. Whether this is due to the negative consequences of greater openness (e.g., see van der Cruijssen et al. (2010), Ehrmann et al. (2010)), as opposed to the benefits of providing markets, and the public, with information which increases the diversity of views, is unclear. However, since the adoption of an inflation targeting (IT) policy strategy alone is found to have little effect on forecast disagreement, and all the central banks in question have become more transparent over time, it is not obvious that the monetary authorities investigated in this study are too transparent. Equally important is the finding that the determinants of forecast disagreement are sensitive to where estimates are clustered in the distribution of forecast disagreement as well as the source of the forecast (e.g., professional versus survey-based forecasts). As a result, quantile regressions provide new insights into the determinants of forecast disagreement as do panel regressions that consider how the source of the forecast influences forecast disagreement.

2. Forecast disagreement: measurement and related literature

Granger (1996) suggests that much can be learned from examining forecasts from different sources.¹ However, there is no universally agreed upon measure of forecast disagreement. Generally, it is evaluated in one of three ways: the squared deviations among individual forecasts (e.g., Lahiri and Sheng (2008)), the inter-quartile range of forecasts (e.g., Mankiw et al. (2003), Capistrán and Timmermann (2008)), or some normalized absolute deviation of forecasts (e.g., Banerghansa and McCracken (2009)). All three measures were evaluated in this study but the results reported below only report the squared deviations measure.² Let d_{th}^j represent forecast disagreement at time t , over a forecast of horizon h , for economy j . Then,

$$d_{th}^j = \frac{1}{N_j - 1} \sum_{i=1}^{N_j} (F_{ith}^j - \bar{F}_{t,h}^j)^2 \quad (1)$$

where F is the inflation forecast, 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 . Forecast disagreement can be grouped according to the source of the forecast. The types of forecasts include ones prepared by central banks, survey-based forecasts conducted among households and businesses, a set of widely followed or core forecasts (i.e., OECD, IMF, Consensus), as well as a group consisting of all non survey-based forecasts. The mean value of d is then calculated for each economy j in the dataset. Grouping of forecasts is likely to be useful for a variety of reasons. For example, some of the data used in this study are projections, others are actual forecasts. Moreover, the assumptions and models (whether of the implicit or explicit variety) used to generate inflation forecasts are also likely to differ across the available sources.

Few empirical studies examine sources of forecast disagreement over time. Dovern et al. (2009) consider Consensus forecasts in the G-7 and find that the dynamics of forecasts for 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. Banerghansa and McCracken (2009) are interested in disagreement about the outlook for the US economy among members of the US Fed's Federal Open Market Committee. They conclude that forecast

accuracy may take a back seat to other considerations, such as ideology. This finding is especially true for the inflation variable (also see Ellison and Sargent (2009)). Relying on the inter-quartile range from the US Survey of Professional Forecasters, Capistrán and Timmermann (2009) report a drop in forecast disagreement since the early 1980s and point to the changing conditional volatility of inflation as one of the sources of dispersion. Their finding of a significant empirical link between the level and conditional inflation forecasts is dependent on fitting a GARCH-type model to inflation (also see Lahiri and Sheng (2008)) which can be sample sensitive.³ Ehrmann et al. (2010) also examine the dispersion of inflation forecasts, among other macro variables, for 12 countries, 7 of which belong to the European Union, and find that greater central bank transparency may reduce the dispersion of inflation forecasts. However, their result holds primarily for professional forecasts alone and the results change when their preferred dispersion measure is used.⁴

Widespread belief in the promise of lower inflation, obtained thanks to central bank independence, may well generate less disagreement about future inflation, unless the monetary authority possesses little credibility. The same argument extends to the influence of greater central bank transparency (e.g., van der Cruijssen and Demertzis, 2007). Yet, transparency comes in different forms (e.g., see Dincer and Eichengreen, 2008). Some forms of transparency, such as policy and political transparency, could also reduce forecast disagreement since the central bank would be expected to keep inflation within fairly narrow bounds. Limits in the ability to process information also come into play in explaining forecast disagreement. For example, van der Cruijssen et al. (2010) argue that there is an optimal level of transparency which is likely equivalent to less than complete transparency. They present empirical evidence suggesting that some central banks may be excessively transparent, and risk confusing markets and the public, but the authors are unable to conclude that a particular level of transparency is optimal. Instead, transparency is believed to be country-specific. The real issue, however, is the clarity of information provision and there is no reason, a priori, why this should be positively correlated with the volume of information made public by central banks.⁵ Moreover, while more transparency may well translate into less effort by the public to digest the added information, it is also conceivable that more and better information may result in more attention aimed at discerning the future direction of monetary policy and, consequently, produce more disagreement among forecasters. For example, greater transparency may well

³ The period under study is not amenable to such interpretations about the conditional volatility of inflation. I was unable to fit a sensible GARCH(1,1) type model to inflation covering the full sample (1999–2009) for any of the economies considered in this study. Other types of conditional volatility models (e.g., TARCh) were also unsuccessful. I also considered adding a widely used measure of stock market volatility, the VIX, which is often used as a broad based indicator of economic uncertainty. The VIX represents the expected volatility of US stock prices in the near term (e.g., 30 days ahead), based on the S&P 500 index, and is calculated by the Chicago Board Options Exchange. The VIX is based on US data and is replicated only for a few other economies (e.g., the euro stoxx 50 volatility index for the euro area, the VXJ and CSFI-VXJ for Japan). Only some of the US evidence below incorporates this indicator in the estimated specifications as the time series properties of the other two VIX type indexes were similar (not shown). Another alternative might be to consider a financial conditions index, available for all the economies considered in this study. I did not consider such a proxy in part because, typically, these indexes mix a variety of financial indicators, some of which are already incorporated in the specifications considered (e.g., interest rate spread).

⁴ Their conclusions are based on monthly data primarily from Consensus forecasts, covering the period from 1995 to 2008.

⁵ Fracasso et al. (2003) examine the record of Inflation Reports published by 19 inflation targeting central banks. Based on their analysis, which includes results from a survey, they conclude that inflation targeting does contribute to improving, among consumers of this information, the clarity with which central banks communicate their intentions and policies.

¹ "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." (Granger (1996, p. 455).

² This is done both to conserve space, and because the main conclusions were unaffected by the chosen forecast disagreement proxy.

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