



# Accuracy, unbiasedness and efficiency of professional macroeconomic forecasts: An empirical comparison for the G7

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## Abstract

In this paper, we use survey data to analyze the accuracy, unbiasedness and efficiency of professional macroeconomic forecasts. We analyze a large panel of individual forecasts that has not previously been analyzed in the literature. We provide evidence on the properties of forecasts for all G7-countries and for four different macroeconomic variables. Our results show a high degree of dispersion of forecast accuracy across forecasters. We also find that there are large differences in the performances of forecasters, not only across countries but also across different macroeconomic variables. In general, the forecasts tend to be biased in situations where the forecasters have to learn about large structural shocks or gradual changes in the trend of a variable. Furthermore, while a sizable fraction of forecasters seem to smooth their GDP forecasts significantly, this does not apply to forecasts made for other macroeconomic variables.

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## 1. Introduction

In this paper, we use survey data to analyze the accuracy, efficiency, and unbiasedness of professional macroeconomic forecasts in the G7 countries. We analyze individual forecasts from large cross sections of professional forecasters, enabling us to throw light on

the heterogeneity across forecasters. Moreover, our results are not affected by problems that arise from the use of average, so-called consensus, forecasts (e.g., aggregation bias). Our large data set has not previously been used exhaustively in the literature. By using this large amount of disaggregate data on individual macroeconomic forecasts, we are able to provide a much broader evidence base on the properties of macroeconomic forecasts than has previously been available in the literature.

One weak point of the empirical literature, which uses survey data to assess the efficiency or unbiasedness of macroeconomic forecasts, is that only a limited

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number of non-US data sets provide information on forecasts. As a consequence, the existing evidence is based predominantly on US data. Notable exceptions are Harvey, Leybourne, and Newbold (2001), who analyze a set of selected individual forecasts for the UK from the survey data set provided by *Consensus Economics*; Gallo, Granger, and Jeon (2002), who analyze the evolution of macroeconomic forecasts for the US, the UK, and Japan; Bowles et al. (2007), who analyze the performances of forecasts summarized in the Survey of Professional Forecasters, conducted by the European Central Bank; Ager, Kappler, and Osterloh (2009) and Isiklar, Lahiri, and Lounгани (2006), who use data from the *Consensus Economics* data set on forecasts for a set of industrialized countries; Lounгани (2001), who additionally examines data for developing countries; Timmermann (2007), who analyzes the performances of IMF forecasts from the World Economic Outlook for various countries; Batchelor (2001), who compares the forecasts made by the IMF and the OECD to private sector forecasts; and Boero, Smith, and Wallis (2008a,b), who analyze forecasts from the Bank of England Survey of External Forecasters. However, all existing international studies, with the exception of Boero et al. (2008a,b) and Harvey et al. (2001), make exclusive use of consensus forecasts rather than analyzing individual forecasts (note though that these three studies are confined to UK data sets). The purpose of our paper is to fill this gap, covering individual forecasts for all G7 countries and for four macroeconomic variables.

Our results are based on an approach which has commonly been used in the literature to model the structure of macroeconomic forecasts, dating back to early contributions by Ball (1962), Figlewski and Wachtel (1981), Mincer and Zarnowitz (1969) and Nordhaus (1987), who introduced the basic modeling framework for analyzing fixed event forecasts.<sup>2</sup> A sequence of fixed event forecasts consists of consecutively formed forecasts for the same event (such as an annual figure for a macroeconomic variable). The data we use below are of this type. Some more recent contributions have proposed improving

the econometric approach for testing the rationality of such large panels of fixed event forecasts. These include Batchelor and Dua (1990) and Keane and Runkle (1990), who introduce an analysis in a panel framework using the Generalized Methods of Moments (GMM) method, as well as Davies and Lahiri (1995), who develop a framework for analyzing three-dimensional panels of survey data, enabling the use of information along all dimensions. To ensure that our results are comparable to existing studies, we closely follow the approach which was suggested by Davies and Lahiri (1995), and recently used by Ager et al. (2009), Boero et al. (2008a), and Clements, Joutz, and Stekler (2007), and suggest only minor modifications to the econometric framework.

Using this framework, we analyze the accuracy and heterogeneity of the forecasts provided by the panelists of the survey and test whether or not they are unbiased and efficient. Assuming that forecast accuracy is the only objective of a forecaster and that her loss function is symmetric and increases with the forecast error, the latter two properties are inevitable features of a rational forecast. Regarding this point, it should be noted, however, that there are also arguments against the assumption that published forecasts reflect true expectations and are meant to minimize a loss function of the described form. Some of these arguments are as follows. First, forecasters might seek to maximize public attention. In this case, an unbiased forecast is no longer optimal, since the utility of the forecaster depends on more than one argument (Laster, Bennett, & Geoum, 1999). Second, forecasters might produce a so-called “intentional” forecast in some situations (Stege, 1989); for example, a forecaster could predict a specific event in order to provoke a policy action that actually prevents the occurrence of the event. Third, forecasters might have asymmetric loss functions (Boero et al., 2008a; Capistrán & Timmermann, 2009). These could have different weights on possible over- or underestimations of an outcome. However, we believe that these arguments are not strong a priori, particularly because the identities of the panelists are revealed in the data set we use. We therefore ignore these issues and base this paper on the null hypothesis that it is in the forecasters’ best interests to provide unbiased and efficient forecasts.

Our findings show that the dispersion of forecast accuracies across panelists is surprisingly high for

<sup>2</sup> Pesaran and Weale (2006) and Stekler (2002) present concise summaries of the most commonly used approaches. The latter also provides an overview of the most prominent survey data sets used in empirical research on forecast efficiency.

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