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Forecasters and rationality—A comment on Fritsche et al., Forecasting the Brazilian Real and Mexican Peso: Asymmetric loss, forecast rationality and forecaster herding

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ABSTRACT

In this commentary stimulated by Fritsche et al.'s (2014) paper on "Forecasting the Brazilian Real and Mexican Peso" and the implications for forecast rationality, I first survey the literature on forecaster behaviour, and conclude that organisational and psychological factors heavily influence the characteristics of the forecasters' errors in any particular application. Econometric models cannot decompose the error into these potential sources, due to their reliance on non-experimental data. An interdisciplinary research strategy of triangulation is needed if we are to improve both our understanding of forecaster behaviour and the value of such forecasts.

1. Introduction

In the paper I comment on here, Fritsche et al. use the examples of the Brazilian Real and the Mexican Peso to discuss interesting and potentially important issues of forecasters' behaviours. In particular, they examine the question of whether an implicit loss function can be inferred for these exchange rate forecasters, on the basis of which their forecasts can be viewed as 'rational'. The authors' careful analysis leads to an ambivalent conclusion as to the form of the loss functions apparently adopted by the individual forecasters; the function may be symmetric for some and asymmetric for others. Where their tests lead to a rejection of rationality, they suggest that this may be due to the assumptions of the test, rather than being a reflection of the reality of their forecasters' behaviours. While there are a number of technical issues that could be explored,[1] in this note I suggest that the lack of a clear resolution of the questions posed by Fritsche and colleagues is an inevitable result of the methodology they have adopted.

The assumption that statistical or econometric models are necessarily more appropriate choices when forecasting for any problem situation has never been shared by practising forecasters. Surveys of forecasting practice regularly lead to the conclusion that judgment is at the heart of the forecasting process in many, if not most, applications (McCarthy, Davis, Golicic, & Mentzer, 2006). However, the early research on judgmental forecasting was focussed on the question of whether judgmental based forecasts could outperform statistical model-based forecasts. Hogarth and Makridakis (1981) reached the unequivocal conclusion that quantitative methods outperform judgmental forecasts. Even at the time, this was in contrast to the conclusions from the accounting earnings forecasting literature, where analysts' (primarily judgmental) forecasts were proving more accurate than time series methods (Armstrong, 1983; Brown, Hagerman, Griffin, & Zmijewski, 1987). Nor were such organisationally based judgmental forecasts executed in a vacuum—they were often based on a statistical forecast where judgment adjusted (or even overrode) the statistical forecast. Understanding judgmental forecasts and their characteristics

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[1] In correspondence, David Peel (Lancaster) noted three potential technical issues: (1) the handling of overlapping errors in 3-month-ahead forecasts, (2) the dating of forecasts and outcomes where irregular interval changes due to data collection from the forecasters can change results, and (3) working with non-stationary variables in the instrument set with unclear implications.

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became a core research question both for the microeconomic foundations of economics and finance, and for practical concerns focussed on improving business forecasting. In this commentary, we briefly review the research evidence on forecaster behaviour across a number of business and economic applications, and conclude that relying on a single paradigm to gain an understanding of the issues (such as rationality, efficiency, herding etc.) is inadequate. What is needed is an interdisciplinary approach that combines methodologies; it is the only research route forward that can answer the important questions as to what influences organizational forecasts and how they might be made more valuable for their users.

2. Bias and efficiency

The debate on the relative accuracy of judgmental forecasts quickly extended beyond simple forecast comparisons, with first the accounting researchers, then macroeconomists, focusing on the questions of bias, efficiency and rationality, and the availability of information. Recent examples include Kwag and Shrieves (2006), who examined earnings forecasts, and studies of stock price forecasts (Aretz, Bartram, & Pope, 2011), macroeconomic forecasts (Dovern & Weisser, 2011) and sports forecasting (Smith & Williams, 2010). Most of these studies have found apparent inefficiencies, further confirming the earlier research. In company sales forecasting, one of the less researched areas in which judgment is undoubtedly most prevalent, both Fildes, Goodwin, Lawrence, and Nikolopoulos (2009) and Franses and Legerstee (2009) also found their forecasters to be biased and overly optimistic. In general, then, we may conclude that forecasters are biased, but both the amount of bias and the direction of the bias depends on the organizational context.

With rational agents at the core of important microeconomic models of market efficiency as well as of models of the economy, research moved on from a focus on bias to the question of the efficiency of the forecasters' use of information. Assuming that the primary goal of the forecaster is to produce the most accurate forecasts achievable, as measured by the mean squared error, a forecaster is said to be efficient with regard to an information set X_{t-1} known at period $(t-1)$ if $\beta_0 = \beta_1 = 0$ in the regression:

$$Y_t - \widehat{Y}_{t-1}(1) = e_t = \beta_0 + \beta_1 X_{t-1} + \nu_t,$$

where $\widehat{Y}_{t-1}(1)$ is the one-period-ahead forecast made at period $t-1$ for period t, with ν_t being independent. The information set may include past forecasts and past actuals. Crucially, it may include unobservables, and also β_1 may be time varying.

The interpretation is straightforward: if $\beta_1 \neq 0$, then a knowledge of X could be used to improve the forecaster's accuracy.

In the area of *accounting earnings forecasting*, research on this question of efficiency in earnings forecasting has been particularly vigorous, with Ramnath, Rock, and Shane (2008) offering a structured bibliography. However, the research has not stopped with the question of mean squared error efficiency, but has concerned itself with a variety of interesting and important questions as to why earnings forecasts might be inefficient. The reasons can be categorised as organisational, institutional and psychological, although the boundaries between these groups are often unclear.

Organisational and institutional reasons for inefficiency include employer characteristics such as firm size, the number of firms the forecaster follows (Clement, 1999), and differences in accounting regulations across countries (see Ramnath et al., 2008, Table 5).

Individual forecaster characteristics also prove to be important determinants of accuracy, with optimism being a commonly observed phenomenon. For example, Easterwood and Nutt (1999) examined the effects of positive and negative information on earnings forecasts, and found an overreaction to positive information and an underreaction to negative information, resulting in systematically optimistic forecasts. Other authors have followed up this question, with no conclusive results (see Ramnath et al., 2008, Table 4). Organisational and linked career concerns also affect the accuracy (Hong & Kubik, 2003). In addition, analyst forecasts are also affected by factors such as pressure to conform to the prevailing consensus, or even Seasonal Affective Disorder (Dolvin, Pyles, & Wu, 2009). Whether such pressures are psychological factors or the forecaster's reaction to organisational incentives, many forecasters tend to 'herd'; that is, their released forecast is influenced by the prevailing consensus. Contrarian 'bold' forecasts have proved to be more accurate (Bernhardt, Campello, & Kutsoati, 2006; Clement & Tse, 2005).

In addition, the accounting literature has also concerned itself with the linked question of how users (in this case, investors) respond to the forecasts, and investors' preferences for different types of analyst; there is not necessarily any match between the two.

Economic forecasting supplies us with further examples where organisational, institutional and behavioural factors affect the accuracy. For example, bold, anti-herding forecasts have been observed with both exchange rate and oil price forecasters (Pierdzioch, Ruelke, & Stadtmann, 2010; Pierdzioch & Stadtmann, 2010). Personal anecdote offers a contrasting account of how an oil price forecaster aimed to fall "half way between Esso and Shell". Bias is common in analyses of individual forecasters, although inefficiencies where publicly available information is neglected are rarer. In fact, as Franses, Kranendonk, and Lanser (2011) point out, at least with regard to their Dutch macroeconomic forecasters, the judgments they made tended to remove the bias arising from the baseline econometric model. In contrast, at the industry level, Fildes (1991) showed that macroeconomic forecasts were interpreted inefficiently as to their effects on construction output forecasts, despite the construction forecasts being unbiased. Forecast accuracy is explained partially by the forecaster's ideology, and partially by their chosen primary technique (Batchelor & Dua, 1990). However, personal characteristics, in this case the age of the macroeconomic forecasters, also affected the accuracy: the older forecasters' eagerness to benefit from a reputational effect led them to make overly bold forecasts, with the bold forecasters proving less accurate (Lamont, 2002), a conclusion that is in contrast to the results from the accounting earnings literature.