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Inattentive professional forecasters

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ABSTRACT

Using the ECB Survey of Professional Forecasters to characterize expectations at the micro-level, we emphasize two new facts: forecasters (i) fail to systematically update their forecasts and (ii) disagree even when updating. It is moreover found that forecasters have predictable forecast errors. These facts are *qualitatively* supportive of recent models of inattention and suggest a setup where agents imperfectly process information due to both sticky information *à la* Mankiw–Reis, and noisy information *à la* Sims. However, building and estimating such an expectation model, we find that it cannot *quantitatively* replicate the error and disagreement observed in the data.

1. Introduction

Imperfect information and the formation of expectations have long been considered—in the tradition of Friedman (1968), Phelps (1968) and Lucas (1972)—an important transmission mechanism of economic fluctuations. Imperfect information has been, in particular, related to the inattention of agents to new information, a behavior that can be rationalized by costly access to information and limited processing capacities. One appeal of these models is to provide an alternative channel to sticky prices to explain the persistent effects of transitory shocks—and in particular, monetary shocks—on the economy. Moreover, this approach can parsimoniously account for patterns of individual expectations observed in survey data that are at odds with the standard perfect information, rational expectations framework, such as predictable forecast errors and forecasts differing across forecasters.[1]

The present paper exploits the panel dimension of such a survey of forecasts—namely the ECB Survey of Professional Forecasters (SPFs)—to produce new micro-facts characterizing the formation of expectations. The ECB SPF is a quarterly panel starting in 1999 surveying around 90 forecasting units in either public or private institutions in the euro area, and allows us to track sequences of forecasts made by the same institution. This dataset is used to show that forecasters fail to systematically update their forecasts and that they disagree even when updating. We then elaborate on these new facts to assess whether models of inattention accurately describe the behavior of forecasters. Our focus is on two types of inattention models that have been discussed in the recent literature. On one hand, *sticky information* models developed by Mankiw and Reis (2002) and Reis (2006a,b), in which agents update their information set infrequently but get perfect information once they do. On the other hand, *noisy information* models proposed by Woodford (2002), Sims (2003) and Maćkowiak and Wiederholt (2009), in which agents continuously update their information but have an imperfect access to it at each period.

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[1] Mankiw and Reis (2011) and Veldkamp (2011) provide recent surveys.

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As in some related previous work, professional forecast data are here used to test imperfect information models. Expert forecasters may not be representative of less sophisticated agents, since professionals obviously allocate substantially more time, collecting and computing resources to the task of forecasting macroeconomic variables. However, Carroll (2003) shows that the opinion of professional forecasters spreads to firms and households, and hence also influences their expectations and decisions. Furthermore, professional forecasters are expected to be the agents in the best position to pay attention to relevant macroeconomic information. As a result, the extent of attention to news among professional forecasters can be seen as an upper bound for other agents' attention to aggregate conditions.

Our paper has two main contributions. The first one is to document the two aforementioned new facts, namely that (i) forecasters do not systematically update their forecasts even when new information is released, and that (ii) forecasters who update also disagree on their forecasts. The originality of our approach is to exploit the sequences of individual forecasts for a given event (say inflation at the end of a given year) provided by the ECB SPF to construct a direct micro-data estimate of the frequency of updating a forecast, which, to our knowledge, has not been documented in survey data before.[2] The results show that, on average, each quarter only 75% of professional forecasters update their 1-year or 2-year ahead forecasts. This first result is in line with the predictions of a *sticky-information* model *à la* Mankiw–Reis. Furthermore, in this setup the frequency of updating has a structural interpretation and corresponds to one key parameter, namely the attention degree. In addition to infrequent updating, the data also provide evidence that forecasters who update their information sets disagree about their forecasts. Consequently, disagreement among experts is not only related to differences in the information sets of forecasters who updated and of those who did not, but also to the fact that, when they update, they use different information sets. This second result is in line with the predictions of a *noisy-information* model *à la* Sims. Moreover, evidence found in previous work relying on survey data that forecasts of experts exhibit predictable errors and that forecasters disagree is observed in the ECB SPF data. These latter two characteristics are in line with both sticky and noisy information models.

The second main contribution of this paper is to perform a formal empirical assessment of inattention models exploiting the cross-section dimension of the survey expectations. Guided by the two aforementioned facts, we first develop a model that features both sticky and noisy information. The empirical performance of this model is assessed by comparing it to some key properties of the SPF through a Minimum Distance Estimation (MDE). More precisely, our approach is to compare moments characterizing the forecast errors and the disagreement generated by this theoretical model with their empirical counterparts observed in the ECB SPF data. Estimation results point to a rejection of the proposed inattention model. Fitting the smoothness observed in the average SPF forecasts would require a much lower attention degree than our micro-data estimates. Such a low attention would in turn lead to much more disagreement, and volatility of disagreement, than observed in the SPF data. Therefore, elements others than the type of inattention included in our expectation model are needed to reconcile the relatively low disagreement among professionals and the relatively high persistence of the aggregate forecasting error.

Our paper is related to studies which compare the properties of survey forecasts with the implications of theoretical expectation models (see Pesaran and Weale, 2006 for a survey). Numerous work found systematic aggregate forecast errors and disagreement in these data, at odds with the perfect information rational expectation framework. Our study provides additional evidence of such predictable forecast errors and disagreement for the European SPF data and a recent sample period. It also complements these results by providing new evidence on the infrequency of individual expectations revision.

Our paper is also closely linked to the literature relying on survey expectation data to assess inattention and, more generally, imperfect information theories. A prominent contribution to this literature is Coibion and Gorodnichenko (2012a). They use aggregated survey data to examine the conditional response of the average forecast error and of the disagreement across forecasters to various structural shocks in order to disentangle the sticky-information from the noisy-information models of inattention. They find mixed support in favor of the two, a result to which our evidence concurs. Their empirical evidence covers a broader range of forecasters than ours as they exploit information from the US SPF as well as forecasts from survey of US firms and consumers, while ours relies specifically on the ECB SPF. Our analysis however exploits the individual data, which allows to observe individual forecast updating, and to assess arguably more directly some implications of the two types of inattention. An advantage of our approach compared to Coibion and Gorodnichenko (2012a) is that it does not require the identification of structural shocks. Moreover, while Coibion and Gorodnichenko (2012a) consider different variants of each type of inattention separately, a distinctive feature of our approach is that a model featuring the two types of inattention simultaneously is here devised and estimated.

Other papers that rely on survey data to assess imperfect information models include Mankiw et al. (2003), Branch (2007), Patton and Timmermann (2010), Sarte (2010), and Coibion and Gorodnichenko (2012b). Mankiw et al. (2003) and Branch (2007) focus on the cross-section distribution of forecasts to calibrate the sticky-information attention parameter mentioned above. By comparison, we underline the importance of investigating the consistency of these parameter values with both the cross-section dispersion of forecasts and the aggregate forecast errors. Furthermore, our approach improves on theirs by considering a model that can explain the disagreement among forecasters who update their information set. Lastly, rather than being calibrated, the attention parameter is here estimated using alternatively direct micro-data estimates and a MDE procedure. Patton and Timmermann (2010) rely on the patterns of forecasts observed over different horizons to emphasize the importance of model disagreement rather than differences in information sets. The model considered here is an alternative approach that generates disagreement without relying on "deep" heterogeneity among

[2] Since the first version of the present paper was circulated, other papers have applied the same methodology to other survey datasets: the Michigan Survey of Consumers (Dräger and Lamla, 2012) and the Consensus Economics survey (Dovern et al., 2013).