



SURVEY OF PROFESSIONAL FORECASTERS

SPF Panelists' Forecasting Methods: A Note on the Aggregate Results of a November 2009 Special Survey

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1. Overview

In November 2009, the Real-Time Data Research Center conducted a special survey in which we asked our panelists for their views on recent changes to the design of the Survey of Professional Forecasters (SPF). We also asked the panelists for their opinions on additional changes we were considering at the time. Our main concern was that we could be placing too much burden on our panelists. Our original plan was to use the results internally as a guide for improving the quality and usefulness of the SPF. However, some recent inquiries from users of the survey have led us to reconsider our views on the benefits to researchers from publishing the results. This note describes the November 2009 special survey and summarizes the findings. The appendix shows the special survey questionnaire and reports the findings for each question.

Twenty-six panelists responded to the special survey. The results were surprisingly informative: Not only did the responses shed light on our concerns about the burden of recent and proposed changes but they also revealed some interesting information on the practices of professional economic forecasters. Overall, the findings indicate that SPF panelists take a flexible approach to their forecasting, as I explain below.

2. Special Survey Design and Motivation

The special survey had three parts. We first asked the panelists for their views on some recent changes we made in extending the survey's annual forecast horizon two years beyond the usual two-year horizon. The second part asked panelists for their views on adding new variables to the survey, including equity prices, the interest rate on Baa-rated

corporate bonds, and house prices. At the time, we were uncertain about the horizon over which our panelists generate their forecasts and whether the longer forecast horizon would represent a temporary change in the survey's design or a permanent one. We were also unsure about the benefits of adding additional variables to the survey and whether such a change would place even more burden on the panelists. The panelists' responses provided interesting insights into their forecasting methods. Among the many interesting results, two stood out:

- A large majority of panelists said they normally forecast real GDP and unemployment over a four-year horizon. Because the four-year horizon covered the survey's two-year extension, we decided to make permanent the two-year extension for selected variables.
- A similar large majority said they did not forecast equity prices, as represented by the S&P 500 index. This was interesting because although movements in equity prices can have an important effect on the macroeconomy (as well as be affected by the macroeconomy), they are hard to forecast. One interpretation is that the panelists think equity prices are so hard to forecast that it is not worth the effort. Accordingly, we decided to abandon our plan to include equity prices as a new variable in the SPF.

In an optional last section of the special survey, we asked the panelists about their use of mathematical models in generating their projections, how often they update their projections, and how their forecast methods change, if at all, with the forecast horizon. In doing so, we followed the general framework of the European Central Bank's survey of its panelists on the ECB Survey of Professional Forecasters.* Two interesting findings from our survey were:

- Overwhelmingly, the panelists reported using mathematical models to form their projections. However, we also found that the panelists apply subjective adjustments to their pure-model forecasts.
- The relative role of mathematical models changes with the forecast horizon.

3. Panelists' Views on Extending the Annual Forecast Horizon

In the SPF of 2009 Q2, in response to developments in the macroeconomy at the time, we began asking our survey panelists for real GDP and unemployment projections over an annual horizon that we extended two years beyond the survey's normal two-year horizon. We also made corresponding adjustments to the survey's density projections for real GDP and added a new section on density projections for unemployment. (The survey's questions on densities ask the panelists to assign probability estimates on various ranges of outcomes in the variables.) Then, in the survey of 2009 Q3, we extended the annual forecast horizon for the interest rates on three-month Treasury bills and 10-year Treasury bonds.

* For more details, see Ieva Rubene's presentation at the Philadelphia Fed's 2009 International Workshop on Expectation Formation at: <http://www.philadelphiafed.org/research-and-data/events/2009/expectation-formation/>.

We also maintained the changes from the previous survey. Over this period, there was growing worry among some Research Department staff that we might be placing too much burden on the survey's panelists. Moreover, staff were not certain about the benefits of making the recent changes permanent. We decided to seek advice from the panelists themselves.

The first part of our November 2009 special survey asked the panelists how they felt about the recent changes and whether the changes were burdensome. Specifically, we asked panelists: (1) whether they normally forecast as far into the future as four years; (2) whether they normally consider probability densities in their own work; (3) whether they find the survey's additional questions burdensome; and (4) whether they use the *survey's* consensus estimates of densities.

The results shed light not only on our concerns but also on the practice of forecasting among the 26 panelists who responded. By a near two-to-one margin, the panelists said they forecast real GDP and unemployment at least four years into the future. However, the margin falls to about one to one for forecasting the rate on three-month Treasury bills and 10-year Treasury bonds that far into the future. The panelists indicated they do not normally consider their own density estimates in their work. However, 11 of 26 respondents reported using the *survey's* consensus density estimates in their work. Seventeen of 25 panelists said the recent changes to the survey were not burdensome.

Using these results, we decided that the mid-2009 changes to the survey's design should be made permanent. At this writing, the survey includes the two-year extension of the annual forecast horizons for real GDP, unemployment, and the interest rates on three-month Treasury bills and 10-year Treasury bonds. For real GDP and unemployment, we also include the expanded density projections.

4. Panelists' Views on Adding Additional Survey Variables

At the time we were making changes to the survey's annual forecast horizon, we were also considering adding additional variables. Motivated by macroeconomic developments at the time, we thought it might be useful to add forecasts for equity prices, house prices, and the interest rate on Baa-rated corporate bonds. However, we worried about the additional burden on panelists. We also worried about the number of forecasts we would receive if the panelists were not already using well-established and trusted models for these variables.

The second part of the survey asked panelists whether they currently forecast equity prices, house prices, and the interest rate on Baa-rated corporate bonds. Because macroeconomic forecasters differ in their preferred index of house prices, we also questioned our panelists about their preferred house-price indexes (to the extent they reported forecasting some measure of house prices). We hoped that there would be some agreement on the index measure and that we could include

that measure as a new survey variable. Finally, we queried the panelists on the additional burden of providing projections for additional variables.

We found few panelists forecasting equity prices at the time. Seventeen of 25 panelists said they did not forecast the well-known S&P 500 index of stock prices. On the Baa interest rate and house prices: Slightly more than half the respondents (14 of 26) reported forecasting the rate on Moody's Baa-rated corporate bonds, while a majority (16 of 26) said they forecast some measure of house prices. Notably, we found little consensus on the exact index of house prices forecast among the 11 alternative indexes we listed in the questionnaire.

Using these results, we decided to abandon our plan for adding equity prices to the survey. Our thinking was that such forecasts would likely be of little value because the panelists were not already producing projections. However, we proceeded with the plan to add the rate on Baa-rated corporate bonds. Indeed, the rate on Moody's Baa-rated corporate bonds has been in the survey since the first quarter of 2010. For house prices, we settled on a hybrid solution: Over the last few years, we have added a special question in first-quarter surveys asking panelists for their fourth-quarter over fourth-quarter projections for a number of alternative index measures.

5. Panelists' Use of Models

In the last section of the special survey, a section that we made optional, we queried the panelists on their use of mathematical models in generating their projections and whether their methods change as the forecast horizon lengthens. We were interested in understanding the extent to which the panelists' reported forecasts reflect the outcome of a pure mathematical model simulation, pure expert judgment stemming from intuition developed from long years of studying the data, or even a combination of the two methods.

We found that almost all respondents use a combination approach to forecasting: Twenty of 25 respondents said they use a mathematical/computer model *plus* subjective adjustments to that model in reporting their projections. (One respondent reported using pure model-generated forecasts, and four respondents said they use only their experience and intuition.) One interpretation of these results is that SPF panelists, like many macroeconomists in general, think models are useful but should not be fully trusted to deliver reasonable results in every circumstance.

It is well known that macroeconometricians have vastly different opinions on the best model to use for forecasting. Some prefer models of a structural nature in which detailed links among various sectors of the economy are explained. Others prefer an atheoretical approach, which relies on dynamic time series correlations among variables to generate projections. We asked our SPF panelists to characterize the broad nature of their preferred model, giving them six alternatives ranging from structural models to pure time series models. Eleven of 20 respondents said they use a combination approach that

weighs the projections of two or more models.

Interestingly, SPF panelists change their forecasting approach with the length of the forecast horizon. At the shortest horizons (two years out and less), mathematical models are widely used by the panelists. Between 18 to 20 forecasters reported using models at these short horizons, depending on the precise horizon that we listed in the questionnaire. Panelists also reported using models for long-horizon projections as well (three or more years out), although proportionately fewer rely on models at the long horizons than at the short horizons.

Taken together, the findings from this section suggest SPF panelists are quite flexible in their approach to forecasting. By and large, they use models *and* subjective considerations in reporting their projections, rather than just models or just subjective considerations. They use a combination of models in forming their expectations, rather than just one model. And, they vary their methods with the forecast horizon.

In the special survey's final question, we asked panelists how frequently they update their projections. We wanted to know whether the participants' forecasts we receive at the beginning of the middle month of each quarter reflect the latest available historical information on the macroeconomy. Such key pieces of information include the Bureau of Economic Analysis's advance report on the national income and product accounts (released about two weeks before the SPF deadline), the Bureau of Labor Statistics's monthly report on the labor market (released at the beginning of each month), and daily observations on such financial variables as interest rates. We found that the panelists update their projections frequently, suggesting that their projections incorporate the most recent information available on the economy around the survey's deadline.

Appendix - Cover Letter, Questionnaire, and Responses

In this appendix, I show the cover letter that we sent to the SPF panelists explaining the nature of the November 2009 special questionnaire. I also show the questionnaire along with the number of respondents (in bold) who choose each answer to the questions. The cover letter and questionnaire appear on the following pages.



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Survey of Professional Forecasters: Your Views on Recent Changes to the Questionnaire

November 24, 2009

In recent surveys, we have augmented the questionnaire with a number of special questions. This includes a two-year extension of the annual forecast horizon for real GDP, unemployment, and short- and long-term interest rates and additional questions on probabilities for real GDP and unemployment.

We are considering adding three more variables: (1) House prices, (2) S&P 500, and (3) Moody's Baa corporate bond rate.

We value your opinion. We hope that you will share your views on the following questions. Thank you in advance for participating in the Survey of Professional Forecasters and sharing your views on recent and proposed changes. Your response is confidential.

You may e-mail your response to

Tom.Stark@phil.frb.org.

Please respond by

Tuesday, December 1.

Name

Affiliation

Recent Changes to the Survey

1. In 2010, the extended annual forecast horizon for real GDP, unemployment, and short- and long-term interest rates will cover the years 2010, 2011, 2012, and 2013. Do you normally forecast out at least four years?

<i>Real GDP</i>	<i>Yes: 18</i>	<i>No: 8</i>
<i>Unemployment</i>	<i>Yes: 17</i>	<i>No: 9</i>
<i>Rate on 3-Month Treasury Bill</i>	<i>Yes: 14</i>	<i>No: 12</i>
<i>Rate on 10-Year Treasury Bond</i>	<i>Yes: 13</i>	<i>No: 13</i>

2. Regarding the density forecasts (the probability that a variable will fall into each of a number of specified ranges), do you normally consider these probabilities in your analysis or do you provide them only for the Survey of Professional Forecasters?

Normally consider in my own analysis: 8
Provide them only for the survey: 17

3. Do you find the recent special questions burdensome to answer?

Not burdensome: 17
Somewhat burdensome: 6
Very burdensome: 2

4. Do you use the survey's results on the density forecasts in your own work?

Yes: 11
No: 15

Proposed Changes

5. Do you currently forecast the variables below?

<i>S&P 500 Index</i>	<i>Yes: 8</i>	<i>No: 17</i>
<i>Rate on Moody's Baa Corp Bonds</i>	<i>Yes: 14</i>	<i>No: 12</i>
<i>House Prices</i>	<i>Yes: 16</i>	<i>No: 10</i>

6. If you forecast house prices, please check all indexes that you forecast:

<i>Case-Shiller 10 (SA):</i>	2
<i>Case-Shiller 10 (NSA):</i>	1
<i>Case-Shiller 20 (SA):</i>	4
<i>Case-Shiller 20 (NSA):</i>	2
<i>Case-Shiller National (SA):</i>	8
<i>Case-Shiller National (NSA):</i>	1
<i>FHFA Purchase Only (SA):</i>	8
<i>FHFA Purchase Only (NSA):</i>	1
<i>FHFA US Total (NSA):</i>	3
<i>Loan Performance:</i>	4
<i>Please specify which one(s):</i>	varies
<i>Other (please specify):</i>	4

7. If you already forecast one or more of the variables in this section (house prices, Baa rate, S&P 500), how burdensome would it be to provide your projections in the survey for the ones that you already forecast?

<i>Not burdensome:</i>	18
<i>Somewhat burdensome:</i>	2
<i>Very burdensome:</i>	1

How Do You Generate Your Projections? (Optional)

The Philadelphia Fed wants to know as much as possible about how you generate your projections for all variables in the survey. There is no right or wrong answer. Any information you provide is valuable. As noted above, your answers are confidential.

8. Please select the method that best describes how you forecast.

<i>Pure Mathematical / Computer Model:</i>	1
<i>Model With Subjective Adjustments:</i>	20
<i>No Model – Experience and Intuition:</i>	4

9. If you use a mathematical model, can you describe its general nature from among the following?

<i>Structural – IS/LM AD/AS:</i>	4
<i>Structural – Other:</i>	2
<i>Time Series – Univariate:</i>	1
<i>Time Series – VAR / VEC:</i>	2
<i>Combination of methods listed:</i>	11
<i>Other:</i>	0

10. If you use a formal mathematical model in any way, you may do so only at some forecast horizons, preferring to rely *only* on your intuition and expertise at other horizons. For each horizon listed below, please indicate whether a model *figures prominently* in your projections.

<i>Current-Quarter Projection:</i>	<i>Model:</i>	18
	<i>No Model:</i>	3

<i>Projection One to Two Years Out:</i>	<i>Model:</i>	20
	<i>No Model:</i>	1

<i>Projection Three to Four Years Out:</i>	<i>Model:</i>	12
	<i>No Model:</i>	5
	<i>Do not forecast this far out:</i>	3

<i>Projection Five or More Years Out:</i>	<i>Model:</i>	9
	<i>No Model:</i>	5
	<i>Do not forecast this far out:</i>	6

11. How often do you update your forecast?

<i>Quarterly – following the advance release of NIPA:</i>	6
<i>Quarterly – other:</i>	3
<i>Monthly – following each release of NIPA:</i>	6
<i>Monthly – other:</i>	4
<i>More frequently than monthly:</i>	5
<i>Other:</i>	1

Thank you for taking the time to respond to this survey. We will put your answers to good use.

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