

**Introduction of a Survey on Inflation Outlook of Firms in the Bank of Japan's
"Short-term Economic Survey of Enterprises in Japan"**

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[Abstract]

The Bank of Japan is planning to launch a survey on the inflation outlook of firms as a new item in its Short-term Economic Survey of Enterprises in Japan (*Tankan*) around the first half of 2014. Firms will be asked to forecast their output prices and the consumer price index (a measure of general prices) over one-year, three-year, and five-year horizons. This is expected to provide unique and valuable information as no other surveys in Japan cover firms' mid- to long-term inflation expectations and no comparable surveys in other countries, to the best of our knowledge, have as large a sample as the Tankan survey (over 11,000 firms). This paper will discuss how the Bank has developed new survey questionnaires reflecting the results of one of the two pilot surveys conducted in 2012.

Key Words: business survey, questionnaire design, inflation outlook

1. Introduction

The Bank of Japan will introduce a new two-part survey on the inflation outlook of firms around the first half of 2014: the survey of "Output Prices" will ask firms about their expectations of the rate of price changes relative to the current level with respect to their mainstay domestic products and services, while the survey of "General Prices" will ask firms about their expectations of the annual percentage change in general prices as measured by the consumer price index. Firms will be asked to provide their forecasts over one-year, three-year, and five-year horizons.

The questions will be added to the Bank's "Short-term Economic Survey of Enterprises in Japan (*Tankan*)". Due to its large sample (approximately 11,000 Japanese private firms selected to best represent the population of approximately 210,000 firms) and high response rate (consistently around 99%), the Tankan is considered the best platform to collect information on the inflation expectations of firms. Answers to the new questions should provide valuable insight given that no other surveys in Japan cover firms' mid- to long-term inflation expectations and no comparable surveys in other countries, to the best of our knowledge, have as large a sample as the Tankan survey.

The Bank will greatly benefit from the new survey items. First and foremost, greater availability of information on inflation expectations from the Tankan survey will help the Bank to assess how monetary policy affects the inflation outlooks of economic entities. Such information is also highly relevant to the Bank's forecasts of economic activity and prices in as much as (1) changes in real interest rates influence the spending decisions of households and firms and (2) changes in inflation expectations

have ramifications for actual inflation rates by affecting how firms price their products and set employee wage levels. The new information is also likely to be appreciated by households, firms, and other policymakers for similar reasons.

2. Pilot surveys

The Bank was initially unsure as to whether it could achieve a satisfactory response rate from corporate executives who might not routinely analyze macroeconomic indicators (such as the consumer price index) or make longer-term forecasts, and thus conducted two pilot surveys in 2012 aimed at assessing feasibility and nailing down the survey format.

These pilot surveys were conducted in March and June 2012. The sample of 1,400 firms—selected from the regular Tankan sample with a view to minimizing biases stemming from differences in firm size and industrial sector—was identical for both surveys, consisting of 350 large manufacturers, 350 small manufacturers, 350 large non-manufacturers, and 350 small non-manufacturers. These 1,400 sample firms were divided into seven groups, each of which was asked a slightly different set of questions for the purpose of comparing possible survey formats. For all sub-samples, a “Don’t know” (“Output Prices”) or “Don’t have a clear view” (“General Prices”) option was prepared so that respondents would not be forced to provide numerical forecasts when they find it difficult to do so. Detailed results of the second survey were made public (with the permission of respondents) to facilitate discussions regarding survey design. We discuss key findings of the two pilot surveys—particularly the second one—below.

3. Results of pilot surveys

a. Is it feasible to survey the inflation outlooks of firms?

To assess the feasibility of the new survey items, we first consider effective response rates, which is the ratio of the number of effective responses (the number of collected survey sheets minus the number of sheets left blank) to the total number of firms. Effective response rates were more than satisfactory for both surveys at around 90%. We next look at “real” effective response rates, which are obtained by subtracting the response rates for “Don’t know” (“Output Prices”) or “Don’t have a clear view” (“General Prices”) from the aforementioned effective response rates. The second pilot survey yielded “real” effective response rates for one-year, three-year, and five-year forecast horizons of 80-90%, 70-80%, and approximately 50%, respectively. Although the real effective response rate was indeed lower for longer forecast horizons, we were encouraged to find that around half of all respondents had given serious consideration to price trends over even a five-year horizon.

b. What is the most effective type of question?

The first pilot survey compared three different approaches: (1) a quantitative multiple-choice approach in which respondents were presented with a number of different numerical ranges; (2) a qualitative multiple-choice approach featuring

descriptive options such as “go up”, “unchanged”, and “go down”; and (3) a free-entry field. The third approach resulted in significantly lower real effective response rates (excluding the “Don’t know” or “Don’t have a clear view” options), whereas little difference was observed between (1) and (2). These results suggest that many respondents feel uncomfortable when asked to provide mid- and long-term inflation forecasts with pinpoint accuracy, but are more willing to select from a range of options. The Bank has therefore decided to adopt the quantitative multiple-choice approach, which should yield richer information without sacrificing effective response rates.

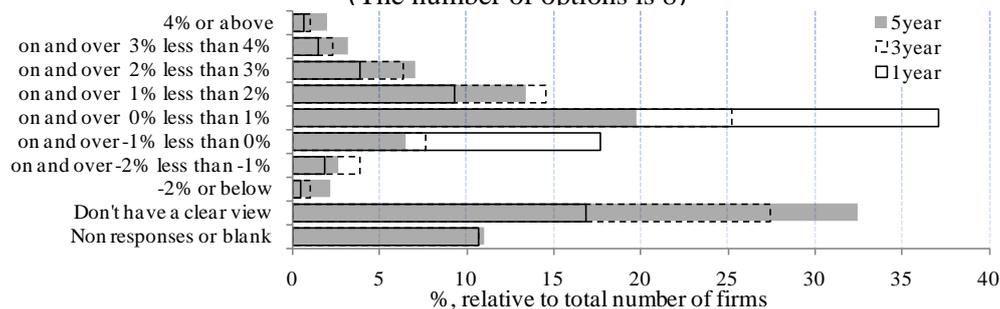
Table: Results of the first pilot survey

	Output Prices			General Prices		
	1-year	3-year	5-year	1-year	3-year	5-year
Effective response rate for quantitative question	88.5%	88.5%	88.5%	89.1%	89.0%	88.5%
Real effective response rate	92.2%	77.7%	67.3%	81.7%	70.6%	63.1%
Effective response rate for qualitative question	89.2%	89.2%	89.2%	88.3%	88.0%	88.0%
Real effective response rate	96.0%	79.2%	61.0%	89.5%	77.2%	71.5%
Effective response rate for question with free-entry field	91.0%	91.0%	91.0%	89.5%	89.5%	89.5%
Real effective response rate	56.5%	44.0%	36.0%	67.5%	57.0%	49.5%

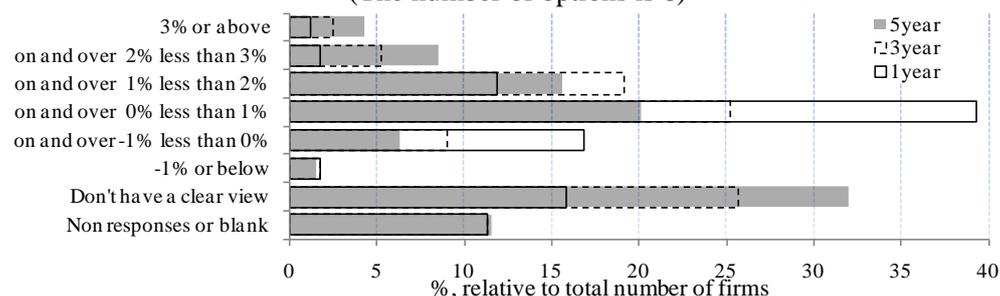
c. Does the number of options have an effect on the distribution of responses?

For the second pilot survey, two sets of questions with different numbers of options were prepared with a view to examining whether respondents might be less comfortable choosing from a larger number of options. The upper and lower panels in Chart 1 show response distribution for the “General Prices” survey for questions with eight or six options respectively.

Chart 1: The distribution of respondents of “Global Prices” at the second pilot survey (The number of options is 8)



(The number of options is 6)

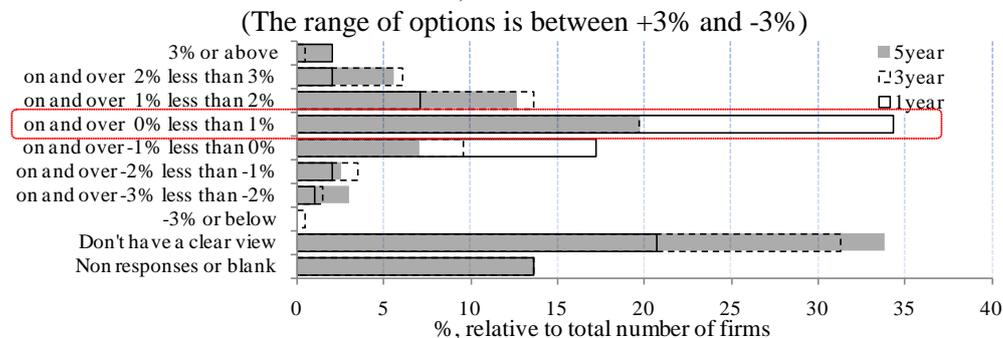
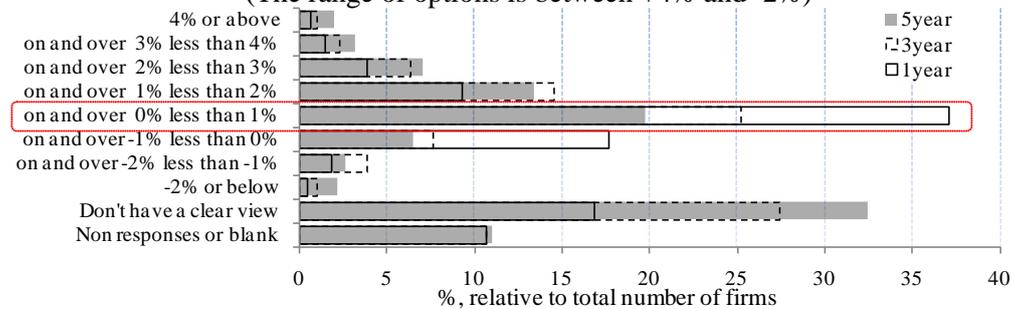


The distributions look to be almost identical, with no significant difference in the percentages of respondents selecting “Don’t have a clear view”. Two sets of questions with six and ten options were provided for the “Output Prices” survey, with very similar results. Given this indication that response rates should not be negatively affected by a larger number of options (at least within the 6–10 range), the Bank has ultimately decided to ask firms to choose from nine numerical options for “Output prices” and ten for “General prices”.

d. Does the range of options affect the distribution of responses?

The next issue to be examined is the possible influence of differences in the ranges covered by the numerical options. In effect, the Bank has tried to allow for the possibility that some survey respondents will pick an option due to its relative position, e.g., the option at the center or that at the upper end. Shifting the range of options could therefore affect the distribution of responses. In the second pilot survey, 599 firms were presented with a question for “General Prices” with eight options for CPI inflation ranging from “4% or above” to “-2% or below”. The mid-point of the range of inflation rates covered by the question was +1% and thus lies between “on and over 0% less than 1%” and “on and over 1% less than 2%”. A further 200 firms were presented with options ranging from “3% or above” to “-1% or below” with a mid-point of 0%. As can be seen from Chart 2, “on and over 0% less than 1%” was the most frequently chosen option for both questions, suggesting that the specific range of options might not have a major impact on responses.

Chart 2: The distribution of respondents of “Global Prices” at the second pilot survey
(The range of options is between +4% and -2%)

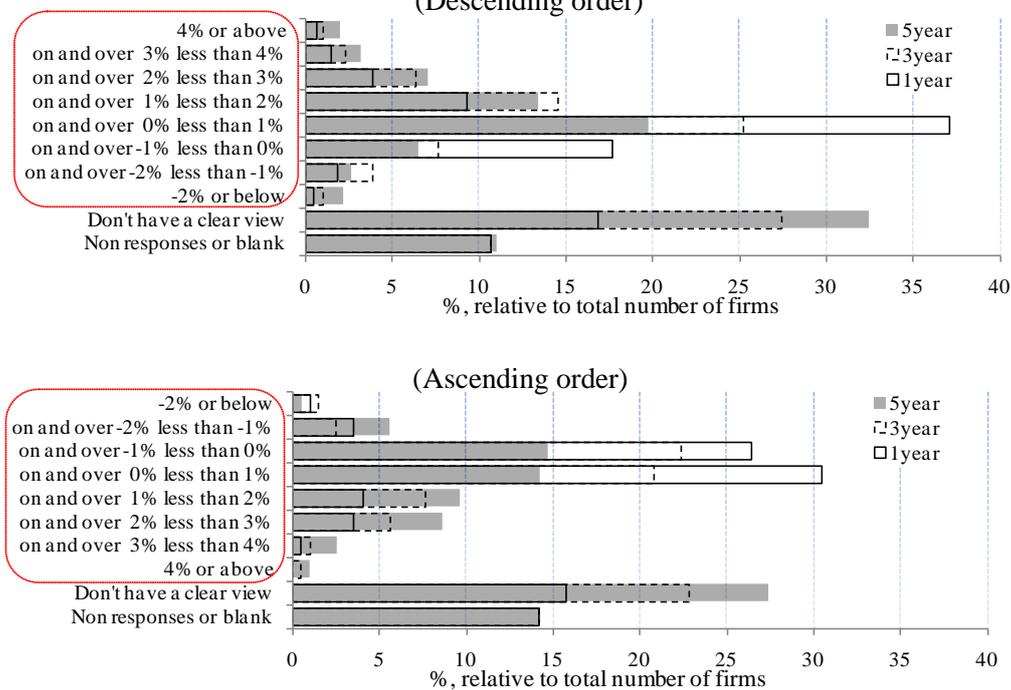


e. Does the order of options have an effect on the distribution of responses?

Another comparison of two different sets of questions identified an interesting aspect of respondent behavior. For most of the sub-samples, the response options were laid

out in descending order, which means that the highest inflation range was listed first and the lowest last. In such cases, the most frequently chosen option was “on and over 0% less than 1%” for all sub-samples and time horizons. However, as can be seen from the lower panel in Chart 3, when the options were presented in ascending order the most frequent option was “on and over 0% less than 1%” for one year ahead but “on and over -1% less than 0%” for three and five years ahead. These results are indicative of non-negligible “response order effects”. One example of this phenomenon is the known tendency for the first of a long list of response options to be favored by some survey respondents (the so-called “primacy effect”). In this particular case relatively few respondents selected the top among the response options, but we may nevertheless interpret our finding as an atypical example of the primacy effect combined with gravity toward the prevailing inflation rate (around 0% at the time of the second pilot survey). Respondents with an outlook of “around 0%” or “unchanged” may simply choose the first option which includes “0%” without paying sufficient attention to the exact details. The first such option encountered when scanning the list from top to bottom is “on and over 0% less than 1%” when the options are listed in descending order and “on and over -1% less than 0%” for ascending order, which may help to explain our finding. If this hypothesis is correct, an effective solution would be to provide a clearer explanation as to which option should be selected by respondents with an outlook of “around 0%”.

Chart 3: The distribution of respondents of “Global Prices” at the second pilot survey (Descending order)



f. Does the appearance of options have an effect on the distribution of responses?

The Bank also invited opinions and suggestions regarding the survey format. A number of academic experts highlighted potential problems with the way in which

response options were framed in the pilot survey. Each option was originally expressed as a numerical range between two integers indicating annual inflation, e.g., “on and over 0% ~ less than 1%.” In the previous section we saw that respondents with an outlook of “around 0%” could have difficulty choosing between “on and over 0% less than 1%” and “on and over -1% less than 0%”. More generally, these experts argued, it may be difficult for respondents with an outlook of “around integer X%” to quickly choose between “on and over X% less than (X+1) %” and “on and over (X-1) % less than X%”.

Some experts pointed out that results based on the original framework could be susceptible to an upward bias: a typical firm is likely to formulate its inflation outlook around an integer percentage (e.g., “around 0 %”), and may end up selecting a range with this outlook at the lower end (e.g., “on and over 0% ~ less than 1%,”). To address this issue, each response option is now expressed as “around (integer) percent” (e.g., “around 0%”), with a numerical range added to each response option (e.g., “+4.5% ~ +5.4%” for “around 5%”) to clarify the range of inflation rates that each response option is intended to cover. This should also help to mitigate the aforementioned response order effects.

4. (Interim) Conclusion

The success of the two pilot surveys suggests that it should be quite feasible to survey the inflation outlooks of non-financial firms including medium- and small-sized enterprises. The pilot surveys also revealed that responses could potentially be influenced by subtle differences in question format. Suggestions from a number of academic experts have also been invaluable from a survey design perspective. The effectiveness and appropriateness of the survey format should next be appraised after a certain amount of time-series data has been accumulated.

[References]

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