USING EUROPEAN COMMISSION SURVEY DATA TO ANALYSE CONSUMER INFLATION EXPECTATIONS AND PERCEPTIONS IN POLAND

Background note

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Non-technical summary

Consumer surveys conducted by the European Commission as a joint programme in the EU economies, offer a unique data set allowing to monitor and analyse empirical measures of inflation perception and expectations. Measures of this kind are of particular interest for central banks, including the National Bank of Poland.

This note shows that the survey question on perceived price changes which is used in the EC survey conducted in Poland by GfK Polonia is not the exact translation of the harmonised question and that the differences in this respect have impact on survey data, constraining their cross-country comparability. They also bias the quantified measures of perceived and expected inflation, although they are rather neutral in terms of assessing how consumers form their inflation expectations in Poland. Nevertheless, it seems that in presenting and interpreting EC consumer survey data more efforts should be devoted to analysing the degree of harmonisation of survey questions included in national surveys.

1. Introduction

As emphasised by the macroeconomic theory, efficient conduct of monetary policy depends on the manner in which private sector agents form their expectations. Central banks nowadays focus primarily on achieving and maintaining price stability, therefore it is extremely important for them to monitor and understand the nature of inflation expectations of economic agents. An assessment of subjective perceptions of current price movements is also needed by monetary policymakers. Discrepancy between subjectively perceived price dynamics and official inflation figures would undermine the confidence in official statistics and might exert negative influence on inflation expectations. Moreover, perceived inflation plays the role of the scaling factor in probability methods allowing quantification of inflation expectations. However, the unobservable character of both variables makes it necessary to develop various methods of measuring them.

Consumer surveys constitute an important information source concerning inflation perception and expectations used in central banks nowadays (e.g.: Mahadeva and Sterne, eds., 2000; Łyziak 2010). The National Bank of Poland uses survey data on consumer inflation expectations in different areas of research, such as: developing techniques for quantifying survey data, testing various features of infla-
tion expectations in a cross-country comparative context, measuring central bank credibility, modeling monetary transmission mechanism, as well as in the communication with the public.

Although useful in macroeconomic analysis and monetary policy considerations, survey data on inflation perceptions and expectations are far from giving perfect proxies of economic agents’ opinions. Survey results are sensitive to sampling errors and the phrasing of the questions; moreover, the respondents may express opinions different from those inspiring their actions (Nardo 2003, p. 646).

European Commission consumer surveys, carried out every month in the EU economies, offer a harmonised database of qualitative responses to survey questions on perceived and expected price changes, providing a means of analysing consumer opinions in this respect and quantifying their inflation perceptions and expectations. Empirical measures of inflation perceptions and expectations based on EC survey data are used in different research areas, including cross-country comparisons of the formation of consumer inflation expectations. They are also important in monetary policy considerations.

2. Phrasing of questions and its impact on survey data on inflation perception and expectations

Survey questions on inflation perception and expectations are broadly classified into quantitative and qualitative ones, depending on whether the respondents are required to give precise quantitative responses or their qualitative assessments only (Pesaran 1987, p. 208). Most consumer surveys examining inflation perception and expectations are designed in a qualitative way, even if their results have to be later quantified. It is due to the fact that opinions about reliability of quantitative survey data are mixed (see: section 4).

The harmonised survey question on price developments during the last 12 months included in the European Commission Consumer Survey, has the following polychotomous form (European Commission 2006, 2007):

“In your opinion, is the price level now compared to that 12 months ago: (1) much higher; (2) moderately higher; (3) a little higher; (4) about the same; (5) lower.” [perception, EC]

In the case of expected price changes the harmonised EC survey question is as follows:

“By comparison with the past 12 months, how do you expect that consumer prices will develop in the next 12 months? They will:(1) increase more rapidly; (2) increase at the same rate; (3) increase at a slower rate; (4) stay about the same; (5) fall.” [expectations, EC]

The exact phrasing of the above questions in national consumer surveys conducted under the joint EU programme can be slightly different due to specific features of national languages. The user guide specifies that “the important point is not to have a literal translation of the original question in English but to retain the meaning of the question”, however, “other differences in the questionnaires (e.g. use of different concepts (…)) should be avoided in order to ensure comparability of survey results across countries” (European Commission 2007, p. 7).

The survey question on perceived price changes in the GfK Polonia survey carried out in Poland within the joint EU programme since May 2001, is not a direct translation of the harmonised one:

“Please, think about the general price level. Are the prices now compared to those 12 months ago: (1) much higher; (2) higher; (3) a little higher; (4) about the same; (5) lower.” [perception, GfK Pol.]  

1 All the questions have the “difficult to say” response category in addition.
The main difference concerns the second category of response – the adjective “moderately” is lacking in the GfK Polonia survey, so respondents observing an increase in prices can choose one of the following response options: “prices are much higher”, “prices are higher” and “prices are a little higher”. The meaning of the second response option is more general than in the harmonised survey question, and it overlaps the responses “prices are much higher” or “prices are a little higher”. Moreover, in the respondents’ opinion such wording of this response category can reflect a stronger price increase than the original form: “prices are moderately higher”. Such wording is likely to affect the distribution of responses, making it systematically different from the distribution that would occur under the survey question fully consistent with the harmonised one.

In line with this hypothesis, in the cross-country comparisons we observe that the fraction of respondents selecting the second response category in Poland is the highest among EU members states and the fraction of consumers claiming that prices are much higher than 12 months ago is relatively low (Figure 1).

To assess the impact of a different phrasing of the survey question used in the Polish version of the EC consumer survey, we refer to two other surveys available for Poland, i.e. surveys by the Central Statistical Office (GUS) (monthly data on inflation perceptions and expectations available since January 2004) and Ipsos (monthly data on inflation perceptions and expectations available since November 2008) that contain questions on inflation perceptions more similar to the official EC consumer survey question, i.e.:

“**In your opinion, how the consumer prices have changed over the last 12 months:** (1) increased a lot; (2) increased moderately; (3) increased slightly; (4) stayed about the same; (5) fall.”  [perception, GUS]

“**In your assessment, how prices have changed over the last 12 months:** (1) increased a lot; (2) increased moderately; (3) increased slightly; (4) stayed about the same; (5) fall.”  [perception, Ipsos]

It turns out that the distribution of survey responses in those additional surveys is considerably different from corresponding figures based on the GfK Polonia survey (Figure 2), in particular the percentage of the most pessimistic respondents in the surveys by Ipsos and GUS is significantly higher. It suggests that in cross-country comparisons a different phrasing of the EC survey question on perceived price changes makes the results for Poland biased (excessively optimistic).

This finding is confirmed by the results of an additional survey that has been conducted recently by Milward Brown SMG/KRC for the National Bank of Poland. Its results suggest that the difference in the wording between the GfK Polonia survey question on perceived price changes and the exact translation of the EC harmonised question has a statistically significant impact on survey responses, i.e. the first fraction of (the most pessimistic) respondents is significantly lower (by approx. 12.7 percentage points), while the second fraction is significantly higher (by approx. 11.6 percentage points) than in the case, in which respondents are confronted with the exact translation of the harmonised EC survey question.

It should be added that survey questions on inflation expectations used in consumer surveys by GfK Polonia, Ipsos and GUS are similar to each other and consistent with the standard described in EC documents. The differences in the wording are rather small, however the question used by the Central Statistical Office (GUS) seems the closest to the EC survey question as phrased in official documents:
“In your opinion, compared to the current situation, how do you expect that prices will develop in the next 12 months? They will: (1) increase more rapidly; (2) increase at the same rate; (3) increase at a slower rate; (4) stay about the same; (5) fall”. [expectations, GfK Pol.]

“Compared to the past 12 months, how do you expect that consumer prices will develop in the next 12 months? They will: (1) increase more rapidly; (2) increase at the same rate; (3) increase at a slower rate; (4) stay about the same; (5) fall”. [expectations, GUS]

“Looking at what is happening now, how do you think that prices will develop in the next 12 months? They will: (1) increase even more rapidly; (2) increase at the same rate; (3) increase at a slower rate; (4) stay about the same; (5) fall”. [expectations, Ipsos]

In contradiction to survey questions on perceived price changes, the distributions of responses to the questions on expected price developments in all the consumer surveys available for Poland are similar to each other (Figure 2).

3. The impact of differences in survey data on quantified measures of inflation expectations and the assessment of their formation

Quantifying inflation expectations on the basis of qualitative survey data we use the probability method originally proposed by Carlson and Parkin (1975) and then extended by Batchelor and Orr (1988). The latter quantification method, working with polychotomous survey questions – in contradiction to the former one – does not impose unbiasedness of inflation expectations. There is however another assumption to be made that concerns the perceived inflation, to which respondents declaring increase in prices of different magnitudes compare their opinions while responding to the survey question. Due to significant differences in survey data on perceived past price changes provided by GfK Polonia, GUS and Ipsos, survey-based measures of consumer inflation perceptions in Poland differ a lot from each other, which leads to differences between survey-based measures of inflation expectations (Figure 3, Table 1). However, those measures are highly correlated with each other – the correlation coefficient between the measure of expectations quantified on the basis of the GfK Polonia survey data and those quantified on the basis of GUS and Ipsos survey data is, respectively, 0.96 and 0.94. In the case of correlation coefficients between analogous measures of inflation perception are even higher.

To assess the impact of the differences in survey data on the results concerning the formation of consumer inflation expectations in Poland, we refer to the recent study by Łyziak (2012). There are two measures of inflation expectations quantified with the use of survey-based measure of perceived inflation as a scaling factor. The first measure uses a probability measure of perceived inflation calculated on the basis of GfK Polonia survey data, while the other one – analogous measure based on the average distribution of survey responses to the question on perceived price changes in all the three consumer surveys available for Poland. The latter measure of inflation perceptions is on average 0.6 percentage points higher than the former one, which translates into a similar difference between both measures of inflation expectations considered in the study (Figure 4, Table 2).

The analysis of formation of inflation expectations shows that even if both measures are different from each other in terms of their average level and expectational errors, the assessment of the way inflation expectations are formed is rather similar (Table 3). Using both measure, it turns out that consumer
inflation expectations are biased predictors of future inflation, although some of the macroeconomic variables available while forming expectations (i.e. exchange rates, industrial output, oil prices), are efficiently processed. The weights of expectations’ forward-lookingness estimated on the basis of both measures of inflation expectations are very similar, and so are the weights of the NBP inflation target. The direct impact of consumer inflation expectations on actual inflation – resulting from the estimates of the New Keynesian hybrid Phillips curves – is only slightly stronger when taking into account inflation expectations calculated with the measure of inflation perceptions based on GfK Polonia survey data.

[here: Table 3]

Therefore we can conclude that deviations of the wording of the GfK Polonia survey question on perceived price changes from the harmonised question have impact on the survey data, constraining their cross-country comparability, and on the quantified measures of perceived and expected inflation, however, their influence on the assessment how consumers form their inflation expectations in Poland is largely negligible.

4. Why not to use quantitative surveys as a cross-check?

Except qualitative surveys there are also quantitative ones, aimed at assessing economic agents’ inflation perceptions and expectations in a more straightforward way. There are some experiments involving consumers being surveyed/questioned in such a manner; however opinions about the reliability of quantitative survey data are mixed. As shown by Jonung (1986), when asked for numerical estimates of the perceived and expected rate of inflation, uncertainty increases considerably. Pesaran and Weale (2006) suggest that it is easier to obtain reliable responses to qualitative questions than to the more precise quantitative questions. They indicate a trade-off between the loss of information caused by the qualitative nature of survey questions and the costs in terms of the response rate and hence possible bias from asking more precise questions. In their view responses to more precise questions yield more precise, but not necessarily more accurate answers (the ‘truth elicitation problem’). Conclusions from empirical studies using quantitative survey data on consumer inflation expectations in EU economies are ambiguous. Lindén (2004) concludes that the quantitative and qualitative data in the euro area countries are similar and even if the qualitative data have a long time series, measuring a given variable directly, offers substantial advantages. In his view quantification methods applied to qualitative data do no more than scale the qualitative data to inflation rate, which means that any information on too high or too low perceptions and expectations is lost. Furthermore, some quantification procedures smooth the data in such a way that any structural shifts in the resulting perceived and expected inflation rates are concealed. Poncet (2004) shows that French consumers’ quantitative assessment of future price changes seems consistent with qualitative responses, but quantitative survey questions do not add any new significant information. Contradictory results are provided by Buiten and Rooijakkers (2003), who demonstrate that in the Netherlands aggregate (point) estimates are not representative, contain a statistical bias, are in part arbitrary and imprecise. Quantitative questions seem to be difficult for a substantial part of consumer population, which leads to inconsistencies in the point estimates for people expecting price to increase at higher rate than currently: about one third of the respondents actually give a lower point estimate.

Polish experiences with the use of quantitative questions on inflation perception and expectations are even more disappointing (Łyziak and Stanisławska 2006). On the one hand there is consistency between qualitative and quantitative responses on the aggregate level, which means that respondents declaring higher inflation perceptions or expectations in the qualitative part of the survey provide higher quantitative responses on average. However, inconsistency of individual responses is even more visible than in the Dutch case. In 2003-2007 the percentage of respondents declaring that prices will increase more rapidly [at slower rate] and giving inconsistent numbers approached 41% [48%] on average (Figure 5).
In addition, respondents asked to state their opinions in the quantitative manner tend to declare specific numbers, such as 5%, 10%, 15%, etc. – in the case of 71% [67%] of respondents giving positive numbers from the range 0%-40%, their perceived [expected] inflation was divisible by 5.

The above observations suggest a low reliability of quantitative data. Quantitative questions seem to be excessively difficult for a significant part of respondents, who declare internally inconsistent and random numbers.

5. Conclusions

Uniform phrasing of survey questions in national consumer surveys ensures comparability of survey results across countries. This note shows that survey question on perceived price changes used in the EC survey conducted in Poland by GfK Polonia is not the exact translation of the harmonised question. Differences in this respect are not neutral from the point of view of survey results, affecting survey-based measures of perceived and expected inflation. However, those differences seem to have a little influence on the assessment how consumers form their inflation expectations in Poland, in particular on the estimates of the degree of their forward-lookingness. Nevertheless, it seems that when presenting and interpreting EC consumer survey data more efforts should be devoted to analysing the degree of harmonisation of survey questions included in national surveys.

References


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2 The effect of this kind – called ‘digit preference’ – is a widespread phenomenon, exhibited in responses to open, numeric questions (e.g. Baker 1992, Curtin 2010).


Graphs and tables

Figure 1. Distribution of responses to the EC survey question on perceived price changes, average fractions of respondents, May 2001 – December 2010

Fractions of respondents selecting respective survey responses – starting from the most pessimistic one – are denoted as: P1, P2, P3, P4 and P5.

Source: own calculation based on EC consumer survey data.
Figure 2. Distribution of responses to survey questions on perceived and expected price changes in consumer surveys in Poland, average fractions of respondents, November 2008 – October 2012

Fractions of respondents selecting respective survey responses – starting from the most pessimistic one – are denoted as: P1, P2, P3, P4, P5 in the case of the survey question on perceived price changes and E1, E2, E3, E4, E5 in the case of the survey question on expected price changes.

Source: own calculation based on EC consumer survey data.

Table 1. Quantified measures of inflation perception and expectations, November 2008 – October 2012

<table>
<thead>
<tr>
<th>Source of survey data on perceived price changes</th>
<th>Average perceived inflation</th>
<th>Average expected inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>GfK Polonia</td>
<td>3.3%</td>
<td>2.8%</td>
</tr>
<tr>
<td>GUS</td>
<td>5.4%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Ipsos</td>
<td>4.4%</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

Source: own calculation based on EC, GUS and Ipsos consumer survey data.

Figure 3. Quantified measures of inflation perception and expectations, May 2001 – October 2012

Source: own calculation based on EC, GUS and Ipsos consumer survey data.
Figure 4. Quantified measures of inflation perception and expectations used in Łyziak (2012), May 2001 – April 2011

Inflation perception

Inflation expectations

Source: own calculation based on EC, GUS and Ipsos consumer survey data.

Table 2. Quantified measures of inflation perception and expectations used in Łyziak (2012), May 2001 – April 2011

<table>
<thead>
<tr>
<th>Source of survey data on perceived price changes</th>
<th>Average perceived inflation</th>
<th>Average expected inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>GfK Polonia</td>
<td>2.3%</td>
<td>1.9%</td>
</tr>
<tr>
<td>GfK Polonia, GUS, Ipsos (average)</td>
<td>2.9%</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

Source: own calculation based on EC, GUS and Ipsos consumer survey data.

Table 3. Selected features of the measures of inflation expectations used in Łyziak (2012), May 2001 – April 2011

<table>
<thead>
<tr>
<th>Source of survey data on perceived price changes</th>
<th>Mean error, ME (p.p.)</th>
<th>Mean absolute error (MAE) (p.p.)</th>
<th>Are expectations unbiased?</th>
<th>Are expectational errors orthogonal with respect to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>GfK Polonia</td>
<td>-0.54</td>
<td>1.74</td>
<td>No</td>
<td>WIBOR 1M: No, WIBOR 3M: No, PLN/EUR: Yes, PLN/USD: Yes, Industrial output: Yes, Unemployment rate: No, Oil price: Yes, CPI: No</td>
</tr>
<tr>
<td>GfK Polonia, GUS, Ipsos (average)</td>
<td>-0.01</td>
<td>2.00</td>
<td>No</td>
<td>WIBOR 1M: No, WIBOR 3M: No, PLN/EUR: Yes, PLN/USD: Yes, Industrial output: Yes, Unemployment rate: No, Oil price: Yes, CPI: No</td>
</tr>
</tbody>
</table>

Source: own calculation based on EC, GUS and Ipsos consumer survey data.
Figure 5. Inconsistency of quantitative and qualitative responses concerning inflation expectations in Poland

Source: own calculations.