How are households' inflation expectations formed?

By Jeremy Rowe of the Bank's Monetary Assessment and Strategy Division.[1]

- Expectations about future inflation are an important factor determining current inflation and therefore the ability of the Monetary Policy Committee (MPC) to meet its 2% inflation target.
- Households' inflation expectations are informed by recent perceptions of inflation, particularly at shorter horizons.
- Wider macroeconomic factors, including the inflation target, also inform households' inflation expectations, and more so at longer horizons.

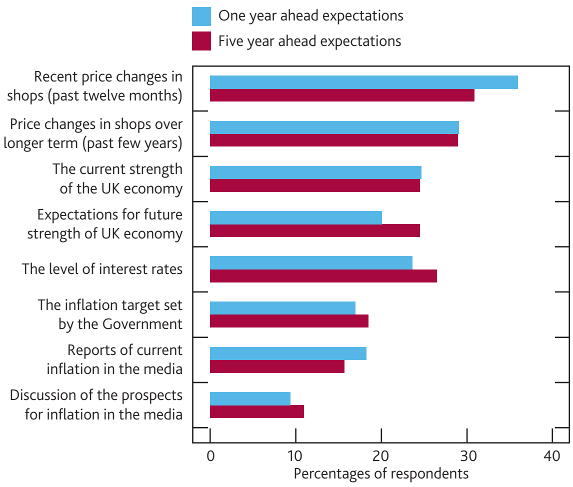
Overview

People's expectations about future inflation are an important influence on the current rate of inflation: when people believe that inflation will be at target in the medium term they set wages and prices in a way that is consistent with those beliefs. Therefore, in judging the risks to its 2% inflation target, as measured by the consumer prices index (CPI), the Monetary Policy Committee (MPC) monitors a range of indicators of inflation expectations.

Understanding how inflation expectations and perceptions are formed helps in interpreting the movements in these data. Households' inflation perceptions are an important influence on the inflation expectations of many households, particularly at shorter horizons (**summary chart**). And historically, changes in inflation perceptions are estimated to be associated with a similar scale change in one year ahead inflation expectations. The relationship between changes in CPI inflation itself and households' inflation expectations is far less strong, and not statistically significant at longer horizons. Households' inflation expectations, particularly at longer horizons, are also influenced by a wider range of macroeconomic factors (**summary chart**), including the inflation target.

The MPC continually assesses movements in inflation expectations, and whether they are anchored. A full assessment will be presented in the August *Inflation Report*.

Summary chart Most important factors reported as determining inflation expectations[a]



Sources: Bank of England, TNS and Bank calculations.

(a) Question: 'What were the most important factors in getting to your expectation for how prices in the shops would change over the next twelve months/over the longer term (say in five years' time)?'. Respondents were allowed to report up to four factors. Results are shown from the 2016 Q1 survey.

(1) The author would like to thank Christian Schnittker for his help in producing this article.

The Bank's monetary policy objective is to maintain price stability — defined by the Government's inflation target of 2%, as measured by the consumer prices index (CPI) — and, subject to that, to support the Government's economic objectives, including those for growth and employment. The Monetary Policy Committee's (MPC's) ability to achieve this remit is affected, in part, by whether inflation expectations are anchored around the inflation target. Indeed, part of the role of the MPC's public communications is to support public confidence in the MPC's ability to meet its inflation target and therefore to anchor expectations of future inflation around that target.

Understanding how inflation expectations are formed is an important consideration for the MPC in assessing the likely persistence of changes in inflation expectations and whether they are anchored. This article focuses on the relative importance of backward and forward-looking factors for the formation of household inflation expectations. Inflation expectations are judged to be anchored if deviations of inflation from the target are widely expected to be transitory, and if people have confidence that inflation will be close to the target in the medium term. Some shocks, such as rises or falls in oil prices, could cause near-term inflation, and near-term inflation expectations, to differ from the inflation target. But because these shocks should not cause inflation to deviate persistently from the target, if inflation expectations are well anchored, longer-term expectations should remain more stable. If inflation expectations became less well anchored households and companies may change the way in which they set prices and wages such that deviations in inflation from the target become more persistent.[1] The August *Inflation Report* will provide a full assessment of recent movements in measures of inflation expectations.

How are households' inflation expectations formed?

To understand the implications of the current level of, and changes in, inflation expectations it is useful to know what affects their formation. Different households place different weights on a variety of factors when forming their expectations and these may differ depending on the time horizon. Understanding which factors are important can help the assessment of the likely persistence of changes in inflation expectations. At one extreme, households may form inflation expectations by considering only past developments in inflation. These 'backward-looking' households' expectations are likely to be quite responsive to changes in inflation. At the other extreme, households may form inflation expectations by considering only expectations for future economic developments and wider economic factors, including the inflation target. These 'forward-looking' households' expectations are likely to be more stable. In reality, households may put weight on both forward and backward-looking factors. If households became more forward looking the responsiveness of inflation expectations to movements in current inflation should fall.[2]

One way to assess whether households are forward or backward looking is to ask households what factors are most important in determining their expectations of inflation. The Bank inflation attitudes survey, which has been running since 1999, included some additional questions this year to shed light on household expectation formation.

To understand how households form their expectations it is useful to first consider what determines households' perceptions of current inflation. These perceptions may differ from CPI inflation because households are asked about changes in 'prices' or 'prices in the shops', rather than changes in a specific price index. Households' personal experience of price changes, particularly for food and drink and household utilities, were reported to be the most important factors influencing their perceptions of price changes over the past twelve months (**Table A**). The current level of CPI and references to inflation in the media were, in contrast, cited only infrequently. That could reflect a low awareness of the CPI inflation rate: in February 2016, 45% of households responded 'don't know' to a question asking about the current level of CPI inflation, and only 20% of respondents correctly answered that it was in the range 0%–1%.

Table A Most important factors reported as determining inflation perceptions[a]

	Percentage of respondents
Personal experience of price changes in...	
Food and drink	65
Household utilities	36
Clothing and footwear	28
Petrol and diesel	22
Housing	15
Other transport	11
Other services	9
Reports of inflation in the media	11
The current level of CPI inflation	4

Sources: Bank of England, TNS and Bank calculations.

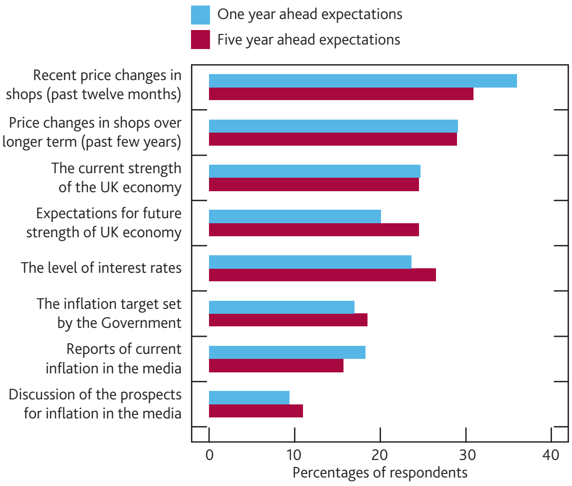
(a) Question: 'What were the most important factors in getting to your perception of how prices had changed over the past twelve months?'. Respondents were allowed to report up to four factors. Results are shown from the 2016 Q1 survey.

When forming their near-term inflation expectations, households view backward-looking factors, such as those that inform their inflation perceptions, as most important. Around

(1) For a comprehensive description of the channels through which inflation expectations could affect the persistence of inflation, see Maule and Pugh (2013).
(2) Brazier *et al* (2008) discuss how the use of simple heuristics of inflation expectations — one based on lagged inflation and the other based on an inflation target — affects the volatility of inflation.

a third of households reported that price changes over the past twelve months were an important factor determining their one year ahead inflation expectations, and around 30% of households paid attention to price changes over previous years (**Chart 1**). But forward-looking factors were also important. The strength of the UK economy, the level of interest rates and the inflation target were each considered by around one fifth of households when forming one year ahead inflation expectations. And as with households' perceptions, comparatively few respondents mentioned media reports of inflation itself as one of the most important factors.

Chart 1 Most important factors reported as determining inflation expectations(a)



Sources: Bank of England, TNS and Bank calculations.

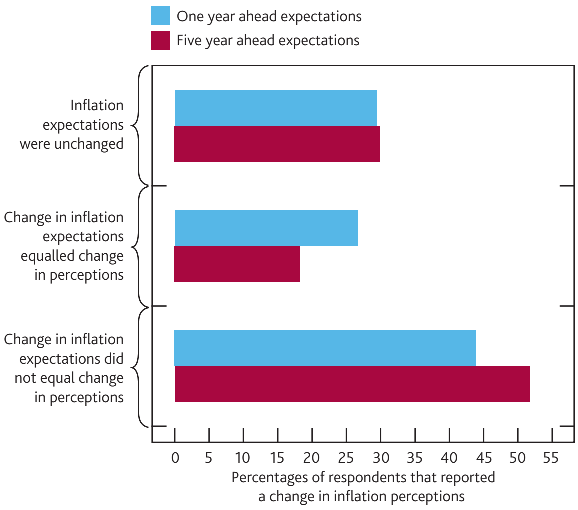
(a) Question: 'What were the most important factors in getting to your expectation for how prices in the shops would change over the next twelve months/over the longer term (say in five years' time)?'. Respondents were allowed to report up to four factors. Results are shown from the 2016 Q1 survey.

Households appear to put slightly more weight on forward-looking factors when forming their inflation expectations at longer horizons than at shorter horizons. The future strength of the UK economy was an important factor for 25% of households when forming their five year ahead inflation expectations (**Chart 1**). That compares to 20% for one year ahead expectations. And slightly fewer households paid attention to recent price changes in determining their five year ahead inflation expectations than in determining their one year ahead inflation expectations. Nevertheless, backward-looking factors, such as past price changes, remained important for many households.

Another way to assess the importance of backward and forward-looking factors in expectation formation is to see how individual households update their inflation expectations over time. To help distinguish between factors, it can be particularly informative to look at the extent to which expectations change when inflation perceptions change. The Bank/NMG survey — a different survey of households carried out on behalf of the Bank by NMG Consulting on a half-yearly basis — includes some questions on inflation expectations. As some households complete consecutive surveys it is possible to look at how individual households' inflation perceptions and expectations change over time.

There are differences across households in how inflation expectations are updated. Between the 2015 H1 and H2 surveys, over a quarter of households changed their one year ahead inflation expectations by the same amount as their inflation perceptions (**Chart 2**). That could be consistent with them placing considerable weight on backward-looking factors when forming their expectations. In contrast, around 30% of households did not change their one year ahead inflation expectations following a change in their perceptions (**Chart 2**). That could be consistent with these households placing considerable weight on forward-looking factors. Around half of the households that did not change their one year ahead inflation expectations also reported that the level of these expectations were 1%–3%, suggesting the 2% inflation target may be a factor influencing their expectations.

Chart 2 How households who changed their inflation perceptions between 2015 H1 and H2 changed their inflation expectations(a)(b)



Sources: NMG Consulting survey and Bank calculations.

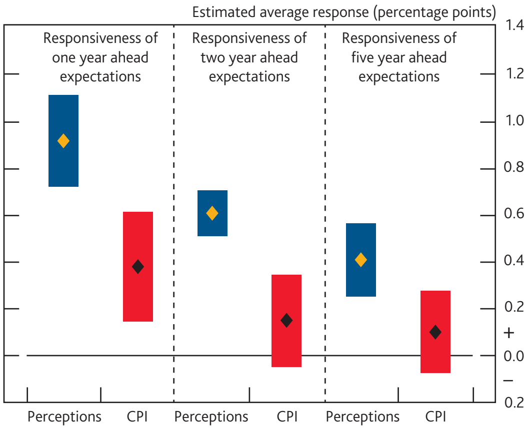
(a) Perceptions question: 'Which of these options best describes how prices have changed over the past twelve months?'. One year ahead expectations question: 'How much would you expect prices in the shops generally to change over the next twelve months?'. Five year ahead expectations question: 'And how about the longer term, say in five years' time? How much would you expect prices in the shops generally to change over a year then?'. Responses to the perceptions and expectations questions are given in bands.
(b) Data are from the 2015 H1 and H2 surveys. Only those households that responded to both surveys and these questions are included in order to calculate the change between periods.

The Bank/NMG survey also supports the earlier finding that longer-term inflation expectations appear less influenced by perceptions than shorter-term expectations. Less than 20% of households changed their five year ahead expectations by the same amount as their inflation perceptions (**Chart 2**). Over 25% of households changed their one year ahead expectations by the same amount as they changed their perceptions.

Responsiveness of inflation expectations to inflation

A further way to see if households are forward or backward looking is to examine the historical relationship between households' inflation expectations and inflation outturns or households' perceptions of inflation. **Chart 3** shows the estimated contemporaneous change in inflation expectations to a 1 percentage point change in inflation perceptions (in blue) or CPI inflation (in red). One would expect changes in inflation perceptions or CPI to have little effect on longer-term expectations if inflation expectations were well anchored and people trust the commitment and ability of the MPC to return inflation to the target.

Chart 3 Responsiveness of median inflation expectations to a 1 percentage point change in median inflation perceptions or CPI inflation[(a)(b)(c)]



Sources: Bank of England, GfK, ONS, TNS and Bank calculations.

(a) These estimates are generated from a regression of the change in median inflation expectations on the change of median inflation perceptions or CPI, and an error correction term lagged by one period. The error correction term is based on a regression of the level of median inflation expectations on the level of median inflation perceptions or CPI. The regressions are estimated from the start date of each expectation series until 2016 Q1. In 2016 Q1, the supplier of the Bank inflation attitudes survey changed from GfK to TNS.
(b) Diamonds show the average contemporaneous impact of a change in perceptions or CPI on median inflation expectations. Bars show 95% confidence intervals around the contemporaneous impact based on robust standard errors.
(c) Perceptions question: 'Which of the options best describes how prices have changed over the past twelve months?'. Expectations question: 'How much would you expect prices in the shops generally to change over the next twelve months/following twelve months/over a year in the longer term, say in five years' time?'. Responses to the perceptions and expectations questions are given in bands.

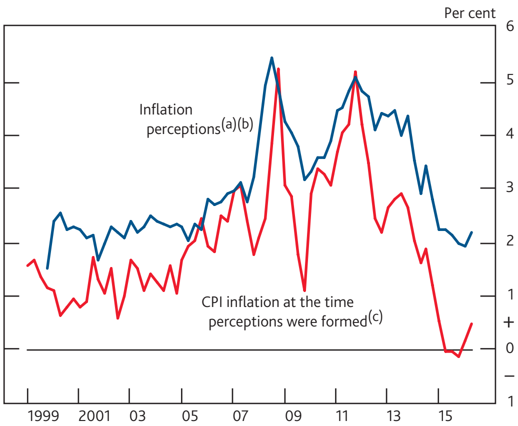
Households' one year ahead inflation expectations appear to change with their perceptions of inflation and inflation outturns. Changes in inflation perceptions, for example, have tended to be associated with a similar scale change in one year ahead expectations, as shown in the orange diamond in the left-hand panel of **Chart 3**. That could suggest that inflation outturns — or perceptions of them — are important in forming short-term inflation expectations and that households are backward looking. Alternatively households may be forward looking, but expect the influences on current inflation to have some persistence over this time horizon.

Two and five year ahead household inflation expectations are less responsive to inflation perceptions, but there is a statistically significant relationship. A 1 percentage point change in households' perceptions of inflation has tended to be associated with a 0.4 percentage point change in five year ahead expectations (**Chart 3**). That would be consistent with households putting more weight on wider economic factors at longer horizons, possibly including their beliefs about the ability of the MPC to return inflation to the 2% inflation target.

Households' perceptions of inflation, rather than CPI inflation itself, appear to be more important when they form their inflation expectations. The relationship between changes in CPI inflation and changes in median inflation expectations is much less than one-for-one at all horizons of inflation expectations (**Chart 3**). This relationship is slightly positive, but at longer horizons it is not statistically significant from zero. The lower responsiveness of inflation expectations to inflation outturns than households' inflation perceptions is consistent with movements in households' perceptions not tracking CPI inflation outturns exactly.

Although inflation perceptions declined between late 2011 and late 2015, they fell by less than CPI inflation (**Chart 4**). Perceptions therefore appear more elevated relative to CPI inflation than has historically been the case.

Chart 4 CPI inflation and median inflation perceptions



Sources: Bank of England, GfK, ONS, TNS and Bank calculations.

(a) In 2016 Q1, the supplier of the Bank inflation attitudes survey changed from GfK to TNS.
(b) Perceptions question: 'Which of the options best describes how prices have changed over the past twelve months?'. Responses are given in bands.
(c) Series shows the latest monthly CPI inflation observation available at the time the Bank inflation attitudes survey was conducted.

Conclusion

The MPC's ability to achieve the inflation target will depend, in part, on whether inflation expectations are anchored around the inflation target.

Understanding how inflation expectations and perceptions are formed helps to interpret movements in these data. Households' inflation expectations are informed by recent perceptions of inflation and by wider macroeconomic factors, including the inflation target. Inflation perceptions and expectations move closely together, particularly at short horizons. But the relationship between changes in CPI inflation and households' inflation expectations is less close at all horizons and insignificant from zero at longer horizons.

A full assessment of recent developments in inflation expectations will be presented in the August *Inflation Report*.

References

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