Perceptions and expectations of price changes and inflation: A review and conceptual framework

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Abstract

Drawing on relevant literature from a diverse range of academic disciplines we present a conceptual framework intended to further our understanding of perceptions and expectations of price changes and inflation. Based on this framework, we provide a detailed review of the literature and an analysis of open issues in current research. The review is primarily concerned with individuals’ perceptions and expectations of price changes and inflation, which can influence individuals’ economic behaviour (e.g. spending and saving decisions). The main insight from the review is that while consumers may have a limited ability to store and recall specific prices, and even succumb to a number of biases in the way in which they form perceptions and expectations of global price changes, they do seem to have some feel for, and ability to judge and forecast, inflation. How they achieve this, however, is still an open question, although plausible explanations have been proposed. While much important research has been undertaken and significant progress made in our understanding of the psychology of inflation, there remain many unanswered questions and interesting avenues for future research, which are discussed in the final part of the paper.

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1. Introduction

In all economies, even relatively stable ones, prices of goods and services vary widely in different contexts. They also change over time, usually upwards resulting in inflation, but also downwards, either seasonally or because of other changes in the market such as lower manufacturing costs following technological advances. Since individuals have limited information processing capacities, this aspect of the economy is difficult for them to process: keeping track of changing prices for specific goods and of general trends in inflation is a complex human activity. Consequently it is subject to the principles of bounded rationality (Gigerenzer & Selten, 2001; Kahneman, 2003; Simon, 1957).

Individual perceptions and expectations of price changes and inflation have been studied over many years in various disciplines including economics, psychology and marketing. For example, important research on the psychology of inflation was presented in a special issue of this journal over 20 years ago (Wärneryd, 1986). While subsequent research has
certainly improved our understanding of these issues, the present review was motivated by
the sense that, despite obvious theoretical and applied significance, our understanding of
such topics remains fragmentary and incomplete. This was highlighted recently by the
unexpected and dramatic effect that the euro changeover had on perceived inflation in
eurozone countries such as Germany (Bechtold & Linz, 2005).

We start by proposing a conceptual framework of perceptions and expectations of price
changes and inflation (see Fig. 1), which summarizes and organizes the main research find-
ings reviewed in this paper. This integrative framework specifies the relationship between
individuals and their socio-economic environment. Price changes in the economy feed into
individuals’ perceptions of inflation both via their direct experience of those changes and
through social amplification mechanisms involving the media and word of mouth. Individ-
uals’ perceptions of inflation are also influenced by their personal income; an individual’s
level of income, and its variation relative to price changes, affects the perceived impact of
price rises on how well off the individual feels, as well as their views of affordability (Gär-
ling & Gamble, 2006; Gamble, 2006).

Perceptions of price changes, economic forecasts and social amplification of forecasts
inform individuals’ expectations for future levels of inflation, with people generally assum-
ing that past price trends will continue. Patterns of influence do not, however, only flow
from the present to the future. Expectation for the current time period, formed at some
previous time, can in some cases bias perceptions of the current situation, as demonstrated
by the work of Traut-Mattausch et al. (2004), while the attitudes the individual has formed
from previous experience of inflation levels can also influence their current perceptions
(Jonung, 1981).

Price perceptions and the expectations for the future will influence that individual’s
financial behaviour. Judgements of expected inflation are especially important for eco-
nomic decisions with consequences beyond the immediate present (such as saving, invest-
ing and borrowing) that require consumers to take into account the expected inflation
rate.1 A similar link between consumers’ current evaluations and their future behaviour
has been established, for instance, by the work on Katona’s (1975) index of consumer sen-
timent (ICS) that could predict general trends in expenditure.2 Furthermore, the behav-
ioural consequences of expectations themselves cause changes in the economy.

In subsequent sections we explore the evidence on the behaviour of various aspects of
the conceptual framework, drawing on and synthesising the evidence from a range of aca-
demic disciplines. We start with a discussion of individuals’ conceptual models of inflation
and the economy (Section 2). We then look in more detail at evidence relating to percep-
tions of inflation (Section 3), perceptions and evaluation of specific price changes (Section
4) and expectations of price change and inflation (Section 5).3 Section 6 discusses poten-

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1 In this review we limit our scope to consider the antecedents of perceptions and expectations, not their
consequences (i.e. impact upon economic behaviour).
2 Webley et al. (2001) observed that this development was one of the major successes of economic psychology in
the last century.
3 Throughout we make two distinctions concerning judgements of price changes. The first is time orientation:
whether the judgements of price changes are retrospective (i.e. perceptions) or prospective (i.e. expectations). The
second is specificity: whether the judgements of price changes are global (i.e. inflation) or specific to a product/service.
tially fruitful lines of investigation for future research, along with methodological challenges to be addressed, and Section 7 concludes.

2. Individuals’ conceptualisations of inflation and the economy

Behrend (1977) argued that lay understanding of inflation is limited, and that people are not fully aware of the personal significance of inflationary movements, including the relationship between wage and price increases. Subsequent studies, however, have provided evidence suggesting that, though not perfect, individuals do demonstrate some understanding of inflation. For example, Williamson and Wearing (1996) conducted an in-depth interview investigation of Australian consumers’ cognitive models of the economy. A composite model showed that the wage/productivity ratio and business costs were perceived to be causes of inflation which was in turn seen to have consequences for savings, real wages and the import/export ratio. More recently Leiser and Drori (2005), also using interviews, investigated the conceptualisations of inflation of various Israeli groups including grocers and teachers. Focusing on social representations, which ‘affect the diffusion of normative theories used by professionals, assimilating but also distorting and modulating them’ (p. 181), they found that although the social representations held by different groups were similar, there were differences related to the individual's position in the economic system. Also, according to the majority of participants, ‘inflation consisted of high(er) prices . . . . its consequence is a lower value of the local currency and devaluation’ (p. 192). Leiser and Drori concluded that, although their participants showed some knowledge of the relationships between inflation and other relevant economics concepts, their understanding was not deep and was significantly different from the normative understanding of economists (see also Bastounis et al., 2004).

Finally, in an earlier study, Svenson and Nilsson (1986) compared psychology students’ mental models of inflation with those of economics students. They developed a method to elicit variables perceived as related to inflation and judgements of the perceived strength of the relationships between them. From these elements, causal chains of perceived determinants and effects of inflation were constructed. The economics students’ mental models of inflation were closer to the expert view and their estimates of expected (and perceived) inflation were closer to the official statistics. However, consistent with the expert view, both groups of students identified wages and international inflation as major causes of inflation.

Clearly, the causes and consequences of inflation are complex and these studies partially confirm Behrend’s (1977) view that lay understanding is limited relative to that of experts. Consistent with the bounded rationality perspective, lay mental representations of the economy are simplified. However, the studies reviewed above do not imply an overly pessimistic view of lay rationality in this domain. First, individuals with a more active involvement in the economy (grocers) or more relevant education (economics students) are likely to have conceptualisations closer to the economist’s view. Second, all groups showed a degree of useful understanding that was in line with the expert view, including understanding of some key antecedents of national price inflation (such as income inflation and international levels of inflation) and important consequences (such as currency devaluation). Thus, the models of the economic world that people construct, although simplified, may have useful adaptive functions.
3. Perceptions of inflation

In this section we discuss research on global judgements of past price changes. We first review earlier research, mainly surveys of perceived inflation that were carried out in the 1980s, and then consider research related to the Euro changeover in 2001. The Euro changeover represents a field study of sorts, which offers important insights into how individuals form perceptions and expectations of price changes. The section concludes with a discussion of cognitive and psycho-social mechanisms involved in the perception of inflation, drawing inferences from the post-euro evidence.

3.1. Early surveys of price changes and inflation

An early questionnaire-based study by Bates and Gabor (1986) assessed UK consumers’ knowledge of prices and price changes in specific products and a very broad product category, groceries. The monthly and annual rate of past price change for grocery prices in general were both grossly overestimated (16.8% per annum compared to an official rate of 4%) with consumers from lower social classes and with lower educational levels showing a stronger overestimation tendency. Also, when participants were asked to imagine having spent 10 pounds on groceries and to report how much it would have cost X years ago they tended to overestimate the influence of inflation in recent years but underestimate it further in the past (10 years ago or more). Kemp (1984, 1987) reported similar findings for specific price changes (see Section 4.1).

Jonung (1981) surveyed Swedish consumers’ perceived and expected rates of inflation, asking respondents to give percentage estimates for changes in prices in general in the previous year (perception) and in the year to come (expectation). With respect to perception, 20% of respondents gave a ‘don’t know’ response, suggesting that a significant proportion of respondents had no or limited knowledge of the inflation rate. However, the average perceived rate of those who did respond was 14.7%, very close to the official rate of inflation at the time (14.2%). Women estimated a higher perceived inflation rate than men, which Jonung explained as probably reflecting their greater exposure to food prices. This suggests that personal experiences with prices (experienced inflation) can shape the perception of inflation. Finally, as Wärneryd (1986) observed, there was a discrepancy between the results obtained in the UK and New Zealand compared to Scandinavian studies (Blomqvist, 1983; Jonung, 1981) in that the perceptions of Scandinavian consumers were more in line with official figures. In summary, then, early studies eliciting judgements of inflation found that consumers show a certain degree of sensitivity to past price changes (e.g. participants could easily report the direction of price changes in the last year: Jonung, 1981). However, marked discrepancies between perceived and official measures of inflation (i.e. Consumer Price Indices, CPIs) were also observed in point estimates, greater in some countries than others.

One reason for discrepancies between perceived and official measures of inflation may be that many individual households do not experience inflation as measured by CPIs, which may be more representative of households in the upper percentiles of the expenditure distribution than those that are less wealthy. This is because CPIs are based on expenditure

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4 It is interesting to relate this to the finding in Kemp (1987) that familiarity with specific prices tended to result in less accurate estimates for past prices, which may account for the higher absolute estimation error of women relative to men (see Section 4.1).
weights of average prices across product categories, and the greater the expenditure the greater the weighting in the CPI. The impact of differential expenditure patterns on experienced inflation can be considerable. Figures for the UK in December 2006 show a range of variation in inflation rates across product categories from –1.8% to 29.7%, while the retail price index (RPI) for that month was 4.4% (Office for National Statistics, 2008). If high inflation rates are in those categories which cover essential goods, such as food and fuel, variation in product category inflation rates may explain why respondents from lower social classes and with lower educational levels (and therefore, low or fixed incomes) demonstrated a stronger tendency to overestimate inflation in Bates and Gabor’s (1986) study. The extent of differences in inflation rates across product categories in different countries may also account for some of the cross-country differences in accuracy relative to official figures (see Antonides, 2008). However, while differential inflation rates across product categories might partly explain the discrepancies between perceived and official measures of inflation, they cannot account for the systematic bias exhibited by individuals over different time periods; i.e. the tendency to overestimate price changes and inflation with respect to recent periods (the last year or so) and to underestimate them further in the past. We return to this issue later in the Section 4.1 where we consider explicit memory for specific price changes.

Other studies have considered the influence of the individuals’ economic circumstances on their evaluations of price change and inflation. For example, personal income can affect evaluations of price changes; thus a particular level of price rise might be evaluated as less aversive if the individual has also had a rise in income. In his discussion of this issue, Fischer (1986, p. 372) argued that: ‘the inflation problem is a perceived decrease in economic well-being ....’ which occurs when ‘.... prices are perceived to be increasing faster than income’. This implies that consumers could evaluate price changes from reference points related to changes in their income rather than from reference prices (discussed in Section 4). Fischer compared US post-war CPI changes with changes in an index of disposable personal income (DPI). He found that in the high inflation decade of the 1970s the highest price inflation (CPI) was in 1974–1975, whereas the greatest impact on economic well-being, defined as the difference between CPI and DPI, was in 1977. Thus, it is not the absolute level of inflation but price inflation relative to income change that impacts on the consumer’s economic well-being. Fischer’s other main argument was that the income-based reference levels used to evaluate price inflation might be related to expected changes in income rather than changes recently experienced. The extent to which people evaluate price changes in terms of income-based or price-based reference levels, or in terms of expectations rather than perceptions, are important empirical questions. Recent experimental research into the former issue by Gärling and Gamble (2006) found that inflationary (average) price increases were perceived to make products more expensive unless simultaneous income increases were salient. In a similar vein, Gamble (2006) found that income influenced price evaluations of expensive products.

Overall, then, the studies reviewed above suggest that an individual’s perception and evaluation of inflation are affected by their direct experience of the impact of price changes, and the magnitude of price changes relative to income.

3.2. Insights from the Euro changeover – a field experiment view

Antonides (2008) investigated the relationship between perceived and actual inflation in 13 European countries for the period 1996–2006. Annual percentage changes in overall
harmonized CPI (HCPI) and in broad product categories were used to predict perceived inflation as measured by the balanced perceived inflation measure (BPI) derived from Eurostat’s monthly consumer survey. Antonides’ main finding was that relative changes in officially measured inflation were often a significant predictor of perceived inflation. He also noted a gap between perceived inflation and changes in HCPI in five Eurozone countries soon after the transition to the euro in January 2002. However, he found no evidence that this persisted in the longer term. Other studies based on large-scale surveys have also reported a marked discrepancy between annual percentage changes in HCPI and the BPI perceived inflation measure after the euro changeover. This was not present, however, in the EU countries not adopting the Euro, i.e. the UK, Sweden and Denmark (Del Giovane & Sabbatini, 2005; Fluch & Stix, 2005). Aucremanne et al. (2005) report evidence that, broadly speaking, perceived inflation tracked HCPI before the introduction to the euro, but that HCPI and BPI diverged in the 12 Eurozone countries after 2001. Other analyses have drawn similar conclusions, for example, Koskimäki (2005) who analysed the Finnish case. It seems plausible, therefore, that the euro currency change may have had an effect on individuals’ perception of inflation. Indeed, this view is further supported by Burgoyne et al. (1999) who reported evidence of biases in perceived inflation after decimalisation in the UK in 1970. However, before we can draw such conclusions we need to consider alternative explanations of the post-euro gap between perceived and actual inflation.

One alternative explanation would be to question whether the HCPI and national CPIs are reliable and valid measures of national price inflation. Various authors have considered this in detail, for example Del Giovane and Sabbatini (2005) with respect to Italian methodology, and Bechtold and Linz (2005) in Germany. Del Giovane and Sabbatini pointed out that careful work by the statistics institutes across Europe in harmonising CPI methodology has improved the rigour of the process of selecting and changing items sampled in the reference basket of goods and of the sampling and averaging of prices. They concluded that ‘the available information does not suggest that the indices calculated by ISTAT [the Italian statistics institute] systematically mismeasure and underestimate inflation’ (p. 22). However, they did recognise, as did Bechtold and Linz, two problems with these average measures of inflation. First, CPI only captures averages whereas some individual price changes experienced by consumers can be much higher and lower. Second, different consumer segments, such as pensioners, may experience much higher levels of inflation than the average. A third, problem, noted by Aucremanne et al. (2005), is that some items important to household economies may not be included in the CPI. With respect to the first problem, Bechtold and Linz analysed changes in the prices of food and drinks in German restaurants and report a rather large ‘spike’ in price increases in January 2002, with some price increases for mineral water being in the 40–100% range. As we discuss later, this could have a bigger impact on perceptions than on CPI-type measures, which give such items a relatively low expenditure weight (see Brachinger, 2008, for further discussion). With respect to the second problem, Del Giovane and Sabbatini found that a CPI index for one broad consumer segment, production and clerical workers, did not differ from the HCPI by more than 0.3% between 1996 and 2003. However, UK based research (The Telegraph, 2006) found that inflation for pensioners had been much higher.
than the average, due to a greater proportion of their expenditure going on rapidly rising fuel bills. With respect to the third problem, Auchremanne, Collin and Dhyne argued that increases in costs of owner occupied housing, not currently included in CPIs, were associated with increases in the perceived-actual inflation gap. This is one expensive item of household costs that may be very important subjectively.

In conclusion, then, the evidence suggests that changes in the CPI and related measures reflect reasonably accurately the changes in prices of average expenditure with respect to the goods and services they measure. However, they do not capture the average expenditure of certain consumer segments and neither do they capture large changes in the price of specific items or in the cost of items not included in the reference basket. Nevertheless, these problems do not fully account for the post-euro gap between perceived and actual inflation, and it is reasonable to conclude that consumers’ post-euro perceptions were biased. In addition to these event-induced biases, the research reviewed in Section 3.1 provides evidence of time-span related biases in perceived inflation. Explanations of such biases are discussed in the remainder of Section 3, where proposed mechanisms underlying global judgements of perceived inflation are considered.

3.3. Mechanisms underlying global judgements of perceived inflation

Several researchers have investigated the basic cognitive and social mechanisms that underlie judgements of perceived inflation and might be responsible for observed biases. Bates and Gabor (1986) suggested that three aspects could be relevant: availability, evaluation and expectation. We will discuss these and a fourth aspect, social amplification, highlighting the more recent research developments.

3.3.1. Availability

Judgements of perceived inflation may involve Tversky and Kahneman’s (1974) availability heuristic: ‘the ease with which individual price increases recently noticed could be brought to mind is likely to have influenced the estimates [of price changes]...’ (Bates and Gabor, 1986, p. 305). For judgements of inflation, four aspects may affect the availability of price changes: recency of purchase, frequency of purchase, size of price change and direction of change. Price changes of more recently and more frequently purchased items may be more activated in memory, while larger price changes as well as losses (price increases) may be more salient, all of which would increase the availability of instances of price changes.

There is some indirect evidence that the availability heuristic plays a role in inflation judgements. Bates and Gabor (1986) suggested that the observed overestimation of price changes over shorter time frames may be consistent with the greater availability of recent price increases in memory. Second, there is evidence that frequency of purchase can influence the perception of inflation (Bank of Spain, 2003; Del Giovane & Sabbatini, 2005), possibly affecting the availability of price change information, although this evidence has been debated (cf. Aucremanne et al., 2005).

Recently, the direct influence of product availability on global judgements of perceived inflation has been demonstrated in priming experiments (Del Missier et al., 2008). In an independent groups experiment, participants were first asked to name products that had either increased or decreased in price in the last year. Shortly after, they were asked to provide a judgement of perceived inflation over the same period. As predicted by the availabil-
ity hypothesis, the generation task biased the subsequent inflation judgement, producing an assimilation effect. The same effect was obtained in a second experiment, which employed an unobtrusive priming manipulation before the judgement. In this study, participants were required to rate their frequency of purchase for a series of products and then to express a judgement of perceived inflation over the past year. In one group the majority of goods presented had increased in price over the previous year, while in another group they had decreased. Again, priming the products had the predicted assimilation effect on inflation judgements.

Finally, Brachinger (2008) recently developed the Index of Perceived Inflation (IPI) to explain the post-euro gap by coupling prospect theory (Kahneman & Tversky, 1979) and the availability heuristic. In his model a price change is evaluated relative to a reference price. Following the availability heuristic, product prices that are retrieved more easily (because of the products’ high frequency of purchase) are weighted more in inflation judgements. In a recent study, Jungermann et al. (2007) found empirical support for this assumption, in that perceived inflation was higher for goods reported to be purchased more frequently.

3.3.2. Evaluation

Two other aspects of availability mentioned earlier relate to how consumers evaluate price changes. As suggested by Bates and Gabor (1986), consumers may attend selectively to larger and to negative changes (note that price increases are perceived as losses: Kalynaram & Winer, 1995; Putler, 1992). These may have greater salience, receive more attention, and consequently be more available at a later time. This may have been a factor in the post-euro gap between perceived and actual inflation because some relatively large price increases were evident at the euro transition. Assuming that price increases (losses) had a greater influence than corresponding price decreases (gains, cf. Hardie et al., 1993) and that unusually large changes had a disproportionate impact on consumers’ reactions, these more salient price changes may have boosted perceived inflation. A recent study provided evidence that the gain/loss asymmetry can also be observed in perceived inflation (Jungermann et al. 2007).

Another important issue concerns the development of reference prices that may be used to evaluate price changes. The perception of inflation after the euro changeover may have been affected by the long-lasting influence of pre-changeover prices (see Brachinger, 2008). In other words, given that euro prices were not well-consolidated in memory soon after the changeover, consumers may have been influenced by pre-changeover reference prices for a prolonged period of time. In some countries, approximate conversion of prices from the old currency may also have contributed to the overestimation of inflation.

3.3.3. Expectations

Consumers’ expectations were also considered by Bates and Gabor (1986) to be possible determinants of biases in the perception of price changes. In inflationary periods consumers may believe that the price of a specific product has gone up, even when it has actually remained unchanged, because general movements in the economic environment make this the expected outcome. Studies of post-euro inflationary perception report findings that are compatible with this idea. Koskimäki (2005, p. 4) reported that in Finland two months prior to the introduction of the euro: ‘76% of the population thought that the introduction will raise the overall price level’. In Ireland, respondents in an interview
study gave several reasons for believing that the introduction of the euro would lead to price increases: (1) prices in euros would be rounded up; (2) price rises would be hidden at the transition; and (3) there would be effects on the Irish economy of joining the Eurozone (Ranyard et al., 2005). Such expectations, then, could well have played a part in the rise in perceived inflation in Eurozone countries after the introduction of the euro.

Direct evidence of the role of expectations on perceived inflation was demonstrated in a series of experiments by Traut-Mattausch et al. (2004). These authors investigated the perception of price changes in Germany where it was widely believed that the introduction of the euro was responsible for steep price increases. In four studies, participants estimated the trend in restaurant prices by examining two menus: an old menu with German Mark (DM) prices and a new menu with euro prices. Menu prices were systematically manipulated, and participants’ judgements showed a consistent bias towards rising prices (in spite of disconfirming evidence), which was related to their expectations concerning price increases. These results were explained with reference to a ‘selective outcome correction’ mechanism. According to this hypothesis, when participants perform calculations to produce a judgement of price trend, they are more prone to detect and correct errors contrary to their expectations, while failing to detect and correct errors that conform to their expectations. In another study, Greitemeyer et al. (2005) provided evidence supporting the causal influence of consumers’ expectations on price trend judgements. They first induced price trend expectations (higher prices versus stable prices) and then, using the menu paradigm above, they examined whether the induced expectations biased consumers’ judgements of price trend. They found that the expectation of rising prices led participants to perceive increased prices when they were actually stable, whereas the expectation of stable prices led to underestimation of price increases. In light of findings such as these, the conceptual framework illustrated in Fig. 1 depicts a bi-directional link between perceptions and expectations.

3.3.4. Social amplification by the media

Wärneryd (1986) and other researchers have commented that consumers learn about price changes and inflation both from direct exposure to prices, and indirectly from the media and by word of mouth. The process of influence from the latter is referred to in the conceptual framework of Fig. 1 by the term social amplification (Pidgeon et al., 2003). In a recent study, Soroka (2006) argued that media reports of economic news may amplify the asymmetry of individual responses to positive and negative changes such as the asymmetric perceptions of price increases and decreases discussed in the previous sub-section. He used autoregressive distributed lag models to analyse time series of UK economic indicators, including inflation and unemployment rates, measures of media coverage of such issues, and public opinion (1986–2000). One major finding was that, as predicted, the media was more responsive to negative changes in the economy than to positive changes. This asymmetry of media reporting was clear for both unemployment and inflation. Mosley (1982, cited by Webley et al., 2001), in an earlier content analysis study of three popular British newspapers, also found that there was more coverage of negative changes in economic indicators than positive changes.

Soroka (2006) further analysed the extent to which economic indicators and media coverage of them could predict economic expectations. He found that media stories concerning negative changes in economic indicators had a significant impact on expectations, which further supported the media amplification hypothesis. Other studies have found
significant general effects of the media on economic expectations (Pruitt et al., 1988; van Veldhoven & Keder, 1988). Since, as discussed in the previous section, expectations have been shown to influence perceptions of past price changes, one chain of influence may be that the media amplification of economic changes and forecasts influences expectations which in turn influence perceptions (as depicted in the conceptual framework illustrated in Fig. 1).

Recent studies of perceived inflation before and after the euro changeover have also analysed the links between media coverage and perceptions of inflation. Many European commentators have discussed the exceptional media coverage given to consumers’ perceptions of unusual price increases after the introduction of the euro, and this may have triggered the mechanism of social amplification. For the Italian case, Del Giovane and Sabbatini (2005) provided evidence for media amplification by counting the frequency of newspaper articles on the inflation debate in two leading Italian newspapers from 1997 to 2003. In a hierarchical regression analysis controlling for CPI they found that the amount of media coverage of inflation had a significant positive effect on perceived inflation, as measured by the BPI. Although such data does not allow us to draw inferences on the direction and the nature of the relationship between media coverage and consumers’ perception, they have the merit of exposing such a relationship.

3.3.5. An integrative view

The research we have summarised in Section 3.3 contributed significantly to our understanding of cognitive and social mechanisms underlying the perception and evaluation of inflation and to the explanation of biases in perceived inflation. Judgements by availability may allow consumers to estimate inflation with a limited degree of effort and reasonable accuracy. However, in specific situations (like the price change pattern that occurred during the euro transition), availability can lead to significant judgemental biases. As indicated by the evidence, these biases may originate from specific interactions between real price changes and the way consumers remember and evaluate prices (see also Brachinger, 2008). An additional influence can be exerted by biasing correction mechanisms activated by expectations, and expectations may be boosted by media amplification. Open issues concerning specific mechanisms will be discussed in Section 6.

4. Perception and evaluation of price changes in specific products and services

What we learn from the research reviewed in the preceding section is that individuals’ perceptions of global price changes are generally reasonable but, in some circumstances, can be inaccurate and open to bias. Given that experiences of prices and price changes provide input to individuals’ perceptions of inflation, as discussed above and as indicated in Fig. 1, research undertaken on the perception and evaluation of specific product prices and price changes can provide insights for research on inflation. In this section we review research on price knowledge and price evaluation to consider how accurately consumers may recall past prices, and how price information is stored in memory. Such price information provides the raw material for the recognition of price changes, which are an input to inflation estimates. We then consider the recognition of price changes. This is not as straightforward as it may initially seem given the complex purchasing environment individuals face: for example, even frequently purchased food items can vary in price between outlets, and within an outlet over time, in response to marketing campaigns. Large price
changes for items that form a large part of the consumer’s budget might feed directly into a perception of increased inflation, as in the example of fuel costs in the UK given in Section 3.2 above (The Telegraph, 2006). Smaller increases in particular products, however, leave the consumer having to decide whether a price change is an element of a general trend or just due to variation in the environment caused, for example, by changes in marketing focus.

4.1. Explicit memory for prices

In considering links between price increases and perceived price increases, the question arises as to the extent of consumers’ current price knowledge. Early research into this found that consumers do not always remember the actual prices last paid for specific goods (e.g. Behrend, 1977; Gabor & Granger, 1961). More recent work by Dickson and Sawyer (1990) reported that more than half of shoppers questioned could not remember the price of items they had just put into a shopping cart (see Monroe & Lee, 1999, for an updated review). In addition, the evidence suggested that the extent of price awareness varies by item type and social class (see Monroe, 1973 for a synthesis of early evidence to this effect). Furthermore, an individual’s memory of the ‘normal’, current price of an item can be influenced, or biased, by marketing techniques (Urbany et al., 1988). Overall, then, the evidence suggests that knowledge of current prices is less than perfect and susceptible to bias. It is not surprising, therefore, that related research has shown that remembered prices (both specific and general) are also prone to error and bias. In particular, more recent prices (over the last year or so) are usually underestimated, while prices further in the past (over a decade ago) are overestimated (Bates & Gabor, 1986; Kemp, 1984, 1987, 1991; Kemp & Willets, 1996).

Other work by Kemp (1987) provided further interesting findings concerning the accuracy of past price recall. One finding, perhaps initially confusing, was that increased familiarity with specific prices tended to result in less accurate estimates of past prices for the item in question. Kemp reconciled his findings with the principle of (retroactive) interference, such that recent prices of a particular item interfere with (or even replace) memory for more distant prices of the same item. This effect was strongest for individuals with the greatest experience with recent prices (i.e. those that had the greatest familiarity). Thus, the current price of an item can influence the recall of its past price. At the same time, however, individuals in Kemp’s (1991) and Kemp and Willets (1996) studies recalled prices that implied a similarity in price change for disparate items beyond that which actually existed. This suggests that memories of past prices for different items might be stored,

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6 Drawing on the exponential increase in the cost of living if the inflation rate is constant, Kemp (1984) related this effect to the systematic misperception of exponential growth reported by Wagenaar and colleagues (e.g. Wagenaar & Sagaria, 1975; Wagenaar & Timmers, 1978, 1979).

7 More recently Cestari et al. (2007) reported evidence to the contrary, whereby more frequent cinema goers were able to more accurately recall pre-Euro change-over cinema prices than less frequent cinema goers. It is difficult, however, to compare directly these two findings, because the Cestari, Del Giovane and Rossi-Arnaud study required price recall across a currency change, which Kemp (1987) did not.

8 Indeed, Cestari et al. (2007) reported evidence in support of just such an effect. The modal response of individuals required to estimate a past price in Lira for a cinema ticket was equal to the current price in Euros converted at an unofficial exchange rate commonly believed to be the rate used by many businesses at the time of the currency changeover.
at least partly, in an amalgamated form, and thus the prices of other items can influence the recall of a particular item’s past price.

Kemp (1999) proposed a theory for how individuals date past events and recall past prices which assumes that memory for prices is based on an associative process and that older information is less likely to be recalled than more recent information. When accurate price information is available it is used, but when it is not available individuals rely on associated dates or prices to estimate the price in question. Via simulation Kemp demonstrated that major features of actual price data are reproduced accurately by the associative theory. Thus if a past price cannot be specifically remembered an estimate is given using retained price information for that item and the more general price trend. This general price trend information could clearly be an input to perceptions and expectations of inflation and, if it is built from experience of prices, this supports the idea of individuals forming an estimate of inflation as they experience it, based on their purchase patterns.

In summary, then, several studies demonstrate that individuals are unable to recall specific past prices accurately; even prices for items they have only just placed in their shopping cart. This finding provides one explanation for the discrepancies reported in the studies reviewed in Section 3.2 between perceived and official measures of inflation. Another cause of such discrepancies could be the forming of a general price trend by an individual which is more likely to be tailored to their experience of inflation, and thus may vary from official estimates if the latter do not reflect purchasing patterns in the individual’s consumer segment. Even if the individual tries to take account of their purchasing patterns to produce an estimate of the official rate of inflation they may not be able to disaggregate their information on general trends to accommodate this.

Research on price recall has also raised the issues of what information consumers store in relation to prices. Monroe and Lee (1999), for example, suggested that price information does not have to be individually recoverable to be useful, as it may provide the basis of a sense of recognition or a sense of whether a newly experienced price is of the expected magnitude, thus providing an implicit memory. It is possible, therefore, that consumers are able to evaluate specific price changes (or indeed new prices on offer) on a more intuitive level. To understand how this might happen we need to consider the manner in which individuals may store prices in memory; an issue to which we now turn.

### 4.2. Encoding and price representation

The limited ability of consumers to recall accurately current and past prices of specific items has clear implications for the study of perceived price changes, thus it is important to consider how prices are stored in memory. Premised on Dehaene’s (1992) triple-code model of numerical manipulation, Vanhuele and Drèze (2002) investigated three potential ways in which price information is encoded in long term memory: as a word sequence (auditory verbal code), as a number (visual Arabic code) or as a approximate range (analogue magnitude code). Different kinds of representation can arise from different types of price exposure. The codes are not seen as mutually exclusive and, although Vanheule and Drèze suggested that people may tend to favour a particular form, the same person may store different prices in different ways or the same price in multiple forms. The precise form

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9 This concept has potential links to the concept of a reference price to be discussed in Section 4.3.
of the specific encoding accessed is task related, with the nature of the probe affecting the encoding that is accessed. Conversions between codes require cognitive effort and therefore will not necessarily happen automatically. Vanhuele and Drèze’s results suggest that this task dependence leads people to not always access their most accurate stored information; only 63% of people who recalled a price within ±5% of the actual value could later recognize the price when presented as a member of a set of prices, thus suggesting conversion was not always used.

In summary then, the manner in which prices are encoded clearly impacts upon the accuracy of price recall, particularly where conversion across different encodings may be required. This could impact upon an individual’s ability to determine the size of price changes accurately. The existence of different, not completely interconverted, encodings for price information raises issues over the source of the general price trend information discussed in Section 4.1, and also raises the query of the format in which general trend information is stored in memory. If it is, for example, primarily stored in an analogue magnitude encoding then general trends will be perceived as approximate ranges and individuals’ responses on the issue of trend will not provide accurate specific values for inflation rates, although they may be in the right range.

4.3. Specific price changes: Recognition and evaluation processes

If we assume that consumers store price knowledge in one or more of the encodings discussed above, how are price changes recognized and evaluated? Price changes of individual products and services are the raw material for identifying a general trend in prices and thus in the perception of inflation. The way in which change is recognised is equally a question in relation to inflation itself (it being the rate of change of price changes): how do consumers decide whether inflation is steady, rising or falling? There is much literature indicating that consumers judge a newly experienced price by comparison to an internal reference price-based on previous experience. Mazumdar et al. (2005) provided a review of the literature on the formation and use of reference prices. They, in common with a number of other authors, see the reference price as conceptually linked to Helson’s (1964) adaptation-level theory, which suggests that people evaluate a stimulus relative to the level they expect from prior experience. This experience is, however, not an unedited recording or aggregation of previous prices paid or observed but also includes the contextual factors of the experience.  

Although reference prices are characterised as points of comparison this does not imply that a reference price is a specific value, and information used for reference price comparisons could potentially come from any of the encodings suggested by Vanhuele and Drèze (2002). Monroe (1971), for example, showed that individuals have ranges of acceptable prices for intended purchases (and these differed for different types of goods, e.g. clothing, electrical, cosmetics), while Kalyanaram and Little (1994) showed that the range of price acceptability is affected by a number of factors.  

Janiszewski and Lichtenstein’s (1999) work, drawing on range theory (Volkmann, 1951), suggests that consumers may invoke

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10 Context would include issues such as the outlet involved, as illustrated by the beer pricing question in Thaler (1985).
11 Being wider for consumers with higher reference prices, less frequent purchasers and those with higher brand loyalty.
a price range, generated from previous experience, in evaluating prices (a similar concept to the analogue magnitude code of Vanheule and Drèze). Their results also suggest context can change the range invoked thus suggesting differing instances of range encoding in an individual. The work of Niedrich et al. (2001) supports consumers having a sense of a range of prices, but they propose that range frequency theory (Parducci, 1965), which also considers the relative frequencies of prices, may be a better explanation for reference prices. Qian and Brown (2005) subsequently proposed a similarity-based sampling model in which prices in a range are given different weightings dependent upon their similarity to a target price. This evidence of reference prices as ranges of values has implications for perceptions of inflation, in that general price trends need to be identified in relation to movements in the range.

As noted above, in a complex environment with different outlets and marketing offers some variation in price might be expected, and ranges of acceptable price can accommodate this. The question then is what size of price increase initiates recognition that a price change has occurred? This is often discussed in terms of a “just noticeable difference” or jnd. However, while jnds are easy to conceptualise in the context of an individual specific price, their meaning in the context of ranges of acceptability is more complex. For example, Janiszewski and Lichtenstein (1999) suggested that individuals may be reluctant to adjust upwards the high point of their price range. In support of this view, Ackerman and Perner (2004) found that consumers are less willing to raise than lower the endpoints of their acceptable range; a single low price can cause range adjustment, whereas multiple exposures to higher prices are needed before high endpoints of the acceptable range are increased. If general price trends are stored as ranges, as suggested above, then the question arises as to whether signs of potential upward and downward trends are treated equally or whether, as with prices, there is selective reluctance to move the range if one direction.

Some light was shed on the identification of trends by Danziger and Segev (2006), who investigated the impact on consumer price evaluations of exposure to ascending and descending series of prices which were characterised as being either cross sectional or time series samples. They showed that experienced trends in a sequence of prices influence consumer price evaluations only when the sequence is characterised as temporal. It seems that price increases are only easily recognised as such when they are presented as having occurred over a period of time, which suggests that consumers may use temporal distribution to distinguish between price change and variability in the current price range.

In summary, then, this section has drawn on existing research in the areas of price knowledge and price evaluation to consider consumer knowledge of prices, how such information is stored in memory and how individuals perceive and evaluate changes in the prices of specific goods and services. There is a substantial marketing literature in these areas and the findings have important implications for explanations of consumers’ perceptions and expectations of inflation.

Firstly, price information is not always stored as accessible individual values, being potentially encoded in a number of ways concurrently by any given individual. This could affect how accurately individuals perceive and form expectations of inflation, with analogue magnitude representations, for example, not being conducive to precise percep-

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12 Range frequency theory is a special case in this model.
tions/expectations. The manner of encoding also raises the issue of how inflation itself is represented in memory and how perceptions are updated. Batchelor’s (1986) investigation of the detection of changes in perceived and expected inflation supports the idea of values stored as ranges. He found results consistent with signal detection theory (Tanner & Swets, 1954), which includes the concept of variability in the stimulus (e.g. differently priced brands of essentially the same item) and noise in the environment (e.g. promotions and discounts) thus being consistent with range based encodings.

Secondly, even if individuals were able to accurately recall past prices they may not perceive changes in prices unless the size of the price change exceeds their jnd, thus some changes that would impact an official inflation figure may not be perceived as a change by the individual. Jointly the findings above suggest that understanding the internal representations and processing of inflation related data (i.e. specific product prices and price changes) is important in understanding what we should expect from individuals in terms of perception and expectation.

5. Expectations of price changes and inflation

We now turn to a review of studies based on surveys and experiments analysing consumers’ judgements of future prices (i.e. expectations). Such judgements are an important component of the conceptual framework in Fig. 1, as they can influence economic decisions relating to spending and saving. In taking these decisions consumers may consider future environmental changes that will affect issues such as the relative cost of items and the real cost of credit. We focus on studies concerning global judgements of inflation, which constitute the great majority, however, research on price expectations of specific products did not provide divergent results. Studies of expectations of price changes and inflation can be summarized in terms of two main issues: (1) the rationality of expectations; (2) the identification of determinants of expectations.

Economic theories have devoted a great deal of research to inflationary expectations and recognized their role in macroeconomics. Various proposals have been put forward to explain how such expectations might be formed (cf. Blomqvist, 1983; Shaw, 1987). The majority of these share the view that individuals are rational: they are able to use (or they learn to use) all the relevant information in an optimal way to make unbiased judgements.

Unfortunately, as observed by Jonung and Laidler (1988), testing the rational expectation hypothesis empirically is problematic, in that the hypothesis requires additional postulates (e.g., clearing competitive markets) and predictive failures can always be ascribed to problems in these postulates. While, in principle, survey data can be used to provide evidence of systematic errors in prediction, the presence of such errors does not prove that expectations formed at an earlier point in time were not rational in that previous context. Jonung and Laidler tried to solve this problem by comparing consumers’ perceptions of current price levels with official inflation data, using a quarterly survey of a large representative sample of the Swedish public. Percentage estimates of current perception and expectation for ‘prices in general’ were requested. As found in studies discussed earlier, the percentage of ‘don’t know’ answers was very high (53%). The perceived inflation measure considered in the survey was the mean value of the percentage estimates, compared to the official CPI in the period 1978–1984.

The results of this study were mixed in that consumers’ perceptions were aligned with real inflation, although there was a slight tendency to overestimate inflation when it was
falling and to underestimate it when it was rising. However, errors in perceptions of inflation were serially autocorrelated, thus challenging the rational expectations hypothesis.\textsuperscript{13} Jacobson and Obermiller (1990) carried out two studies that cast doubt on the rational expectations hypothesis. In the first study, marketing students were asked, for an eight-week period, to predict the price of a brand of tuna in the following week. Participants were provided with all the information usually available to consumers (current prices, brand type, size). Participants’ estimates were found to be both biased (affected by systematic error) and inefficient (not reflecting all the available information). Moreover, the data were consistent with a model in which price expectations depend on current price and unknown factors that produced a serially correlated error. A second study provided further support for the serially correlated model.

As discussed earlier, Kemp (1987) conducted a study in 1985, which considered both perceptions of past price changes and inflationary expectations. The expectation questions required participants to estimate prices in five years time. Present prices were generally accurately estimated, and past and future price estimates were moderately correlated (both for general and for specific prices), indicating that: “individual expectations of future price changes were related to individual misperceptions of changes in past prices” (p. 185).

Simmons and Weiserbs (1992) investigated consumers’ price perceptions and expectations derived from survey data, analysing the quarterly EEC consumer anticipation survey for inflation in the UK. According to their analyses, consumers took into account only the most recent past (exhibiting a short memory) and perceived inflation was used as a basis for forecasting the future inflation rate.

Summarizing, there are good reasons to debate the rationality of inflationary expectations. The main problem for the hypothesis appears to be the serial correlation of estimation errors found in a number of studies.\textsuperscript{14} Moreover, as pointed out by Shaw (1987), the rational expectations hypothesis is also affected by theoretical problems. Adopting a conception of bounded rationality would help to explain the majority of existing findings, which indeed showed that people are reasonably accurate in forecasting inflation, possibly by using a very limited amount of information. However, significant biases in expectations may arise as a consequence of misperception of recent inflation or due to the influence of other factors.

Turning to research on the determinants of expectations, a number of studies have shown that past and recent inflation (Carlson & Parkin, 1975; Defris & Williams, 1979; Gärling & Gamble, 2008) and perceived inflation (Jonung, 1981; Wärneryd & Wahlund, 1985) are reliable predictors of expected inflation, hence the bi-directional linkage between perceptions and expectations depicted in the conceptual framework of Fig. 1. It seems reasonable to hypothesize that consumers’ perceptions can mediate the capacity of past (and current) inflation to forecast the expected rate. Available evidence suggests that a plausible model of prospective estimation can be based on rather simple cognitive heuristics, which\textsuperscript{13} The presence of correlated errors signals that consumers are not able to take into account the past history of errors in their predictions. Therefore, they miss the opportunity to use this information to develop more accurate expectations.

\textsuperscript{14} A limit of empirical tests of the rational expectation hypothesis is that they are mainly focused on consumers’ estimations, which are considered as reliable indicators of beliefs that guide actions. Hopefully, future research will also consider with more attention the rationality of actions that depend on these beliefs (e.g., investing, borrowing …).
project current (or recent) perceived inflation into the future. Other factors may affect this estimation process, like age (Jonung, 1981), personal assets and economic preferences (Webley & Spears, 1986), although the causal chains and the mechanisms deploying these additional influences remain to be discovered. The development and testing of psychologically-grounded models of inflation estimation can be marked as a high-priority issue in the future research agenda.

6. Future directions and methodological challenges

While we have obtained important insights and much progress has undoubtedly been made, our review has identified some gaps, inconsistencies and unresolved issues in the literature on the psychology of price changes and inflation that lead us to suggest priorities and possibilities for future research. The first issue for future research, identified Section 2, is the nature and role of consumers’ mental models of the economy, especially their understanding of the causes and consequences of price changes and inflation. While it is generally acknowledged that lay understanding of the economy is based on simplified representations, some analyses have emphasised its naivety while others have focused on its functionality and similarity to expert views. Further in-depth interview studies involving consumers with different economic experiences would usefully elucidate this further. Such interviews could be analysed using recent advances in cognitive mapping techniques to identify the role of price inflation in consumers’ mental models of both the broad economy and of their household economy. Since previous studies have not explored consumers’ cognitive maps of their household economy, this would be a particularly important new direction. A second under-researched issue for future research was identified in Section 3.1: the extent to which consumers evaluate price changes in terms of reference levels based on perceived or expected income rather than in terms of reference prices.

In Section 3 we considered the cognitive mechanisms underlying global judgments of inflation. Although support for a plausible explanation involving availability and the aggregation of a small number of specific price changes has been reported, other explanations, for example involving the adjustment of the official inflation rate based on personal evaluations, need to be investigated further. In addition, consumers may rely on different strategies in different contexts, and the future research agenda should include as a priority the precise specification of any such variation in judgement strategies.

Turning to the social mechanisms discussed in Section 3, an in-depth analysis of public perceptions of inflation using the broad theoretical framework of the social amplification of risk (SARF) and its emerging methodology would be a fruitful line of enquiry for future research. One objective would be to fully understand the role of media reporting in consumers’ perceptions and expectations of inflation. Two approaches would be interesting: (1) quantitative analyses of different countries to investigate the relationships over time between inflation, perceived inflation and factors relevant to social amplification at different levels, including government and other economic action and media reports (in the SARF framework this approach is called the layering method); (2) in-depth qualitative analyses of specific cases of price and inflation changes and economic events associated with them, with particular reference to the role and impact of the media. For the latter, the kinds of case study carried out within the SARF framework provide relevant methodological models. Some case studies could be at the level of the nation state, for example, the introduction of the euro in Ireland, and the subsequent public concern over the ‘rip-off
Republic’ (Irish Independent, 2002), and others could investigate the impact of specific price changes such as house price changes over recent years in the UK.

Two further issues for future research were identified in Section 4, concerning: (1) how individuals distinguish between price variability and price trend (which is necessary for them to identify inflation), and (2) how information on inflation/general price trend is stored in memory and updated with information on price changes.

The studies reviewed in Section 4.3 suggest price knowledge is stored in the form of ranges, and such a representation would require consumers encountering a price outside their expected range to decide whether to interpret this as a change in current price variability or a sign of future price trend (i.e. inflation). The fact that individuals require multiple exposures to a higher price before they adjust the higher endpoint of their acceptable range could provide a mechanism by which adjustment to trend is damped in a real-world environment where exposure to prices takes place over a period of time, potentially making trend detection more reliable. The issue of how individuals distinguish between price variability and price trend is an important area for future research since it forms a potential building block for models of perceived inflation.

The second literature gap identified in Section 4 is that of how inflation related information is stored in memory and updated. While a number of studies demonstrate that perceptions of inflation can be systematically biased, research has not as yet identified how knowledge of inflation is represented or constructed in memory. The findings from research on the representation of specific prices and price changes in memory might also apply to global price changes (i.e. inflation) so there may be multiple representations of inflation. If, and to what extent, individuals update ranges, use some sort of aggregation mechanism to maintain a representation of inflation, use mechanisms such as anchoring and adjustment based on official figures, or use mechanisms not so far considered is unclear.

Section 5 reviewed the state of the art of research on inflationary expectations. Our review suggests that two goals should be pursued in future research. The first is to assess more precisely the practical significance of the departure from rationality of inflationary expectations and the second is to understand why such departures occur. Achieving this second goal requires developing a psychologically plausible model of prospective estimation. As we have seen, significant progresses have been made with the identification of potential determinants of inflationary expectations. However, further research is needed to fully specify and test a boundedly rational model of inflation estimation.

There are, in addition, methodological challenges to overcome. First, issues concerning the extent to which the disparate response modes employed by prior studies might affect the results obtained. As shown above, the research on specific price recall suggests that how a value is elicited can give very different impressions of knowledge and accuracy. Other work shows how the mode of presentation of price changes impacts on their evaluation (Bonini & Rumiati, 2002; Heath et al., 1995). Given that people may, as suggested above, have more than one way in which inflation is encoded in memory the issue of different response modes invoking different encodings (as has been shown with specific prices) needs both further investigation and to be taken account of when making comparisons across studies.

Second, it is possible to question what responses to survey based queries on perceived and past inflation rates are capturing. As discussed in Section 3, for example, the accuracy of a consumer’s response on inflation rates cannot be determined by reference to official figures, such as the CPI, unless that consumer’s experience is reflected by the items used to calculate the official figure. This will not always be the case, however. Take as an exam-
ple the UK, where the disparate inflation rates between product categories (Office of National Statistics, 2008) and across consumer segments (The Telegraph, 2006) suggest that the CPI may not capture fully the inflation experienced by an individual consumer. Although this level of differentiation may not be universal (either across countries or within a country over time), it should nevertheless be taken into account both when attempting to draw comparisons across studies, and when evaluating the accuracy of responses to survey questions. Addressing such methodological issues and taking account of them when making comparisons across studies will be helpful in further clarifying our understanding of the economics and psychology of inflation.

7. Conclusion

The literature reviewed in this paper provides empirical evidence for many of the relationships shown in the conceptual framework depicted in Fig. 1. Individuals’ experience in their environment in terms of their income, purchase experience and media exposure contribute to their perceptions of inflation. These perceptions contribute to expectations for the future but are also affected by the expectations previously held for the current period in a manner reminiscent of confirmation bias. The main insight from the review is that while consumers may have a limited ability to store and recall specific prices and even succumb to a number of biases in the way in which they form perceptions and expectations of global price changes, they do seem to have some feel for, and ability to judge and forecast, inflation. How they achieve this, however, is still an open question, although plausible explanations have been proposed.

Our appreciation of individuals’ perceptions and expectations of inflation will benefit from greater insight into the cognitive mechanisms around perceiving inflationary trends in the environment and the way in which these are influenced by external factors such as social amplification and by internal factors such as prior expectations and the consumer’s memory and knowledge of prices. Understanding such mechanisms will allow us to anticipate consumer response to price changes in the environment and to policies seen as affecting them in particular ways. It will be important to take account of the complexity of inflation, recognising that individual perceptions will vary depending on spending patterns, and research designs also need to consider the potential influence of cognitive mechanisms on individual responses to questions put using different response modes. In addition, further exploration of the mental models consumers have of inflation and its determinants, using recent methodological developments in areas such as cognitive mapping, would also help our understanding. These mental models will shape consumer response to perceived inflationary changes, and thus have the potential for significant economic impact via the behavioural changes individuals make in response to inflationary trends.

To conclude, while much important research has emerged since the special issue on the psychology of inflation in this journal over 20 years ago (Wärneryd, 1986) and significant progress has been made, there remain many unanswered questions and interesting avenues for future research.

References


