



Income increases do not compensate for perceived inflation—A price-consumption anomaly



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ABSTRACT

We conjecture that lay people extrapolate past inflation, evaluate product prices relative to recalled reference prices, and perceive income increases as opportunities to increase consumption. From these conjectures we derive the hypothesis that past inflation makes products or expenditures appear more expensive, whereas income increases make them more affordable but not less expensive. In Experiment 1 205 undergraduates were in different conditions asked to imagine that they received no income increase, a 10% income increase, or that past inflation was 5%, 10% or 30%. In line with the hypothesis, expensiveness of common products and expenditures was rated higher for the higher inflation rates but not lower for the income increase. In Experiment 2 114 undergraduates imagined that they would receive a 10% income decrease or increase and that past inflation was 5% or 15%. Also in line with the hypothesis, ratings of expensiveness of the products and expenditures increased with increased inflation but did not vary with income, whereas ratings of affordability of the products and expenditures increased more with an income increase than a decrease but did not vary with inflation.

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It is theoretically posited (Friedman, 1971) that inflation does not make product prices higher in real value since price increases are compensated for by income increases. Yet, even if income increases would fully compensate for inflation, lay people may still believe that inflation makes products or expenditures more expensive. Such an anomaly would have important consequences for wage negotiations (Faroque and Minor, 2009), as one would expect employees to raise excessive claims of income increases. The anomaly is also likely to influence decisions about saving, consumption, taking up credit, and investing in pension plans (Ranyard et al., 2008). There may also be effects on consumer confidence (Duffy and Lunn, 2009) and implementation of monetary policies (Fluch and Stix, 2005). Therefore, psychological research illuminating how people perceive inflationary price increases would potentially have an impact on economic policy.

In the conceptual framework proposed by Ranyard et al. (2008), it is posited that in perceiving inflation people make inferences from singular instances of price changes that are influenced by availability, evaluation, and expectation. Other sources than direct price perceptions also have an influence, referred to as a process

of social amplification. These other sources include official statistics, the mass media, and word of mouth. Our focus is primarily on direct price perceptions.

How people perceive inflation from prices has been extensively studied (see Ranyard et al., 2008, for a review). One common finding referred to as the money illusion (Fehr and Tyran, 2001; Fisher, 1928) is that people think of prices in nominal rather than in real terms. As argued by Shafir et al., 1997, the nominal representation of money is a frame more easily adopted by people than the alternative inflation-adjusted representation. Furthermore, perceived inflationary price increases are frequently overestimated or underestimated. Several causes of such misperceptions of inflation are known. In connection with the change in Europe to the common currency Euro, German studies showed that inflationary price increases are overestimated. Reflecting people's expectations, in Germany the Euro is referred to as the "Teuro" alluding to the German word "teuer" for expensive. Such expectations of inflation after the Euro changeover appear to largely account for the overestimation (Christandl et al., 2011; Greitemeyer et al., 2005; Traut-Mattausch et al., 2004). Other causes of misperceptions of inflation include consumers' difficulty in isolating systematic from unsystematic changes in product prices (Gärling and Gamble, 2008; Gärling et al., 2007; Juliusson et al., 2005) and to accurately infer exponential increases (Christandl and Gärling, 2011). Still another cause is that consumers misremember product prices or the date of a given price (Kemp, 1984, 1987, 1991). A fourth cause is that consumers overestimate price increases for products which they

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purchase frequently (Brachinger, 2008). A fifth cause is that consumers due to loss aversion overestimate price increases by placing larger weights on price increases (“losses”) than price decreases (“gains”) (Greitemeyer and Greifeneder, 2008; Jungermann et al., 2009). Thus, when judging the overall inflation rate, people estimate a price increase as higher than an equally large price decrease. As a result, everything else equal, their impression is that inflation is higher than the official inflation rate measured for both products with price increases and decreases.

None of these previous studies has directly addressed the question of whether people perceive that inflationary price increases make prices appear more expensive and to which degree income increases would counteract such an effect. An exception is a survey by Shiller (1997) showing that lay people associate inflation with more expensive prices. In contrast, economists participating in the survey did not make this association, presumably because they took into account that theoretically inflation is compensated for by income increases. Another survey (Leiser and Drori, 2005) yielded similar results in showing that different groups of lay people associate inflation with price increases and depreciation of the value of money but do not see a connection to changes in income.

To understand how lay people think about inflationary price increases, we conjecture that (i) past inflation is extrapolated (being representative of the future) unless disconfirmed by other information; (ii) product prices and other expenditures are evaluated relative to reference prices that are some average of past prices retrieved from memory, and; (iii) income increases are perceived as opportunities to increase consumption. In support of our first conjecture that people believe past inflation would continue, Kemp (1987) found that memory of past price changes correlate with expectations of future price changes. Similar results were obtained in a survey by Simmons and Weiserbs (1992) demonstrating that participants extrapolate future inflation from current perceived inflation. Additional studies corroborate that past inflation is an important determinant of expected inflation (Carlson and Parkin, 1975; Defris and Williams, 1979; Jonung, 1981).

A large body of research documenting that reference prices play an important role for the evaluation of product prices (Lowengart, 2002; Mazumdar et al., 2005; Raghuram, 2006) supports our second conjecture. Fischer (1986) argued that inflation might be perceived to decrease economic well-being if prices are perceived to increase faster than income. This argument implies that consumers would evaluate price changes based on changes in income rather than based on reference prices. However, Fischer (1986) reported no empirical test. On the contrary, available empirical evidence suggests that product prices are in general evaluated relative to reference prices, not relative to income, assets or budgets. In a study of the effects of currency and income on evaluation of prices, Gamble (2006) found that whether or not income information was presented did not substantially influence ratings of expensiveness of product prices. This suggests that people largely disregard income when evaluating product prices.

Evidence for our third conjecture is provided by a study dealing with the question of how a prior temporary income change influences choices between buying and deferred buying (Karlsson et al., 1999). In line with predictions from the behavioral life-cycle theory (Shefrin and Thaler, 1988), willingness to buy was found to be stronger when participants received a temporary income increase than when they received a temporary income decrease, even though total assets were equal. This suggests consistent with our third conjecture that income increases are perceived as opportunities to increase consumption.

If people extrapolate prior inflation [conjecture (i)] and do not evaluate inflation-adjusted product prices and other expenditures relative to income, assets or budgets, but relative to reference prices

that are some average of past prices retrieved from memory [conjecture (ii)], information about past inflation would make product prices and other expenditures appear more expensive, as people would expect the inflationary price trend to continue. At the same time, information about an income increase would not make product prices and other expenditures appear less expensive, as the increased income is perceived to provide an opportunity to increase consumption [conjecture (iii)]. This hypothesis is tested in Experiments 1 and 2, in which participants presented information about inflation and income changes are asked to rate the expensiveness of product prices and other expenditures.

In Experiment 2 participants are also asked to rate the degree to which they are able to afford the different products and expenditures. If income increases are perceived as opportunities to increase consumption [conjecture (iii)], it is hypothesized that information about income changes would influence ratings of affordability. In contrast, the ratings of affordability would not be influenced by information about inflation.

1. Experiment 1

Based on our first conjecture that past inflation is representative of the future and therefore extrapolated unless disconfirmed by other information, in Experiment 1 we expect that participants would rate expensiveness of product prices and expenditures taking into account information about past inflation. Based on our second conjecture that product prices and other expenditures are evaluated relative to reference prices, we expect that the ratings of expensiveness would increase with inflation. At the same time our second and third conjectures imply that income should not influence the ratings of expensiveness.

1.1. Method

1.1.1. Participants

Participants were in three waves recruited from a pool of undergraduates enrolled in different study programs at University of Gothenburg, Göteborg Sweden. In the first wave 73 participants (74.6% women, age ranging from 19 to 56 years with a mean of 29.1 years) were randomly assigned to two groups of approximately equal size, a control condition (no income increase, no inflation) and a condition with a 10% income increase. In the second wave 60 participants (50.0% women, age ranging from 18 to 51 years with a mean of 25.9 years) were randomly assigned to a control group (no income increase, no inflation) and an experimental group of the same size. The experimental group consisted of a condition with 10% inflation the preceding year. Finally, in the third wave 77 participants (79.2% women, age ranging from 19 to 64 years with a mean of 36.4 years) were randomly assigned to two groups of approximately equal size consisting of conditions with 5% and 30% inflationary price increases from the preceding year.

1.1.2. Procedure

A booklet was distributed to participants after lectures. Interspersed with unrelated tasks in the booklet, on a single page general instructions were presented followed by more specific instructions about the ratings participants were asked to perform on the page that followed.

The instructions asked participants to imagine that they had been offered a job in another EU country. Before accepting the job they would want to find out about the costs of living in the country. The next page presented a list of goods they would need to purchase (e.g. bed), services they would be likely to use (e.g. dinner in restaurant), and other necessary living costs (e.g. rent for apartment) (see Table 1). Participants' task was to rate how expensive they found each of these products or expenditures. Equivalent prices

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