



Price perception and confirmation bias in the context of a VAT increase

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ARTICLE INFO

Article history:

Received 5 May 2010

Received in revised form 17 September 2010

Accepted 21 September 2010

Available online 26 September 2010

JEL classification:

E31

H20

PsycINFO classification:

2340

2960

3920

Keywords:

Confirmation bias

Perceived inflation

Taxes

Memory

ABSTRACT

This paper examines a potential confirmation bias in price perception in consequence to a real-world event and different explanations for such a confirmation bias. In a panel design conducted 2 months before and after a raise in value-added tax (VAT), 303 participants had to estimate the current prices for four products affected and four products not affected by this raise in VAT and the anticipated or recalled prices of these products. Before the VAT increase, an undifferentiated belief in strong future price increases was prevalent. After the VAT increase, a confirmation bias was found: in retrospect, participants reported price increases that were significantly higher than the official price development and in line with an undifferentiated belief in marked price increases. Two theoretical explanations for confirmation bias, i.e., the biased use of price information and the selective distortion of memory, fit the data.

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1. Introduction

The price knowledge of consumers is limited. On the whole, studies dealing with price knowledge in different countries for a variety of product categories show that consumers have enormous difficulties when trying to recall prices accurately (e.g., Evanschitzky, Kenning, & Vogel, 2004). The same applies for the perception of price changes. When shopping in the supermarket, for instance, many consumers do not even notice price reductions for items on sale (Dickson & Sawyer, 1990). Given these general shortcomings in the perception of specific price changes, the question arises as to what happens with the price perception of consumers if changes in the economic environment induce widespread price changes over different product categories. In the light of these shortcomings in price knowledge and the perception of price changes, we argue that the perception of price changes is often based more on general beliefs than on hard facts. If, in turn, changes in the economic environment induce changes in those general beliefs, both the perception of current prices and the memory of previous prices may be distorted to adapt to these new beliefs. Such a distortion can be considered as an occurrence of the confirmation bias, which describes the interpretation of evidence in line with one's pre-existent hypotheses. Such a confirmation bias could contribute to the perception of price changes that do not exist objectively, and could therefore lead to buying

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resistance with resulting negative consequences on the economy. In the present paper, we study the perception of price changes by looking at price estimates made by consumers before and after the introduction of a VAT increase in Germany. We also study the expectations of consumers and their recollection of these prices. Using a panel design, we are able to examine a potential confirmation bias in the perception of price changes and the underlying processes.

1.1. Confirmation bias within the context of a VAT increase

People tend to seek or interpret evidence in ways that are favorable to the beliefs or expectations they hold. This phenomenon is called confirmation bias and has been found in many contexts, both in laboratory and real-world settings (for overviews, see Nickerson, 1998; Oswald & Grosjean, 2004). Recent research, for instance, has found that confirmation bias provides an explanation as to why citizens tend to maintain their political beliefs (Taber & Lodge, 2006) or their beliefs regarding gender roles (Marks & Fraley, 2006). The confirmation bias is also an explanation as to why expectations of guilt may lead to a self-fulfilling prophecy effect when law enforcement officers gather information in criminal investigations (Hill, Memon, & McGeorge, 2008).

A natural experiment to study confirmation bias in a real-world setting was provided by the increase of the value-added tax (VAT) from 16% to 19% in Germany in 2007. In the opinion of the public, the VAT increase was seen as a tremendous increase in general price levels. Several newspapers framed it as an inappropriate tax increase; e.g., “the biggest tax rip-off all-time” (Express-Online, 2008) and focused on its negative consequences. Accordingly, consumer behavior changed. For example, a remarkable increase in the registration of new vehicles was observed between the announcement and the actual introduction of the VAT increase (Finanznachrichten.de, 2008). Given this background, we assume that consumers at the time of the study shared an undifferentiated hypothesis about price developments that could be formulated as follows: “the VAT increase will lead to considerable price increases”. Apart from this strong hypothesis, which should be the first precondition for the occurrence of a confirmation bias (Oswald & Grosjean, 2004), the literature on the confirmation bias identifies complexity and ambiguity as a second precondition (Nickerson, 1998). As there is a wide range of diverse products, each of which has many different prices, it appears that this precondition is also fulfilled in the context of a VAT increase. It was therefore expected that the hypothesis “the VAT increase will lead to considerable price increases” would result in a confirmation bias. Such confirmation bias could be detected some time after the VAT increase by finding particular distortions of price estimates. Hence, we expected that participants would tend to overestimate price changes.

The public discussion on the consequences of the VAT increase completely neglected that many convenience goods such as groceries and newspapers were not affected by the VAT increase. All these products were subject to the so-called “reduced tax rate” of 7%, which remained stable. Therefore, the VAT increase provided a quasi-experimental setting because the VAT change only applied to certain types of products. Thus, we were able to examine differences in price estimates for products that were affected and not affected by the VAT increase. We will now discuss how three different major explanations for a confirmation bias (*biased search for new information, biased use of information, selective distortion of memory*) can be related to these particular price perceptions and how the natural quasi-experiment of price changes that are restricted to certain product categories can contribute to the identification of the processes underlying confirmation bias.

(1) A confirmation bias may be the result of a *biased search for new information* (Oswald & Grosjean, 2004). Such a biased search for new information is often referred to as a positive test strategy (Klayman & Ha, 1987): people test a hypothesis by examining instances in which the property or event is expected to occur (to see if it does occur) or by examining instances in which it is known to have occurred (to see if the hypothesized conditions prevailed). A recent study found, for instance, that if participants were free to select the source of the arguments they read, they selected the source supporting their political beliefs, leading finally to attitude polarization (Taber & Lodge, 2006). A confirmation bias may also result if the questions asked are non-diagnostic and very likely to be answered in the affirmative, independently of the truth of the hypothesis (Trope & Bassok, 1983). This could also result from a specific way of questioning that influences respondents (Hill et al., 2008; Zuckermann, Knee, Hodgins, & Miyake, 1995). However, a biased search for new information is difficult in the context of a VAT increase because people would need to know price changes for the products under consideration in the first place before they could decide whether to selectively evaluate them. As the prices for many products did not increase at all, the evaluation of price changes for these products should contribute to a disconfirmation of the hypothesis that the VAT increase leads to considerable price increases. Biased search for new information, in the current context, is therefore not a suitable explanation for the occurrence of a confirmation bias.

(2) A confirmation bias may be the result of a *biased use of information*, which can occur as (a) the *selective recall of information* that would confirm one's hypothesis and (b) a *systematic re-interpretation of information* contradicting one's hypothesis. For instance, the latter can occur by attributing less importance to disconfirming information than to confirming information.

(2a) According to the explanation of a *selective recall*, information that is hypothesis-confirming is recalled more easily, which in turn may contribute to a confirmation bias. With regard to this possibility, a meta-analysis by Stangor and McMillan (1992) found that there are some conditions that may foster a selective recall of hypothesis-confirming information. Hence, a selective recall becomes likely to occur if (a) individuals have already established hypotheses, (b) there exists a temporal delay between the processing of stimulus information and the recall or judgment, and (c) complex conditions of information processing exist due to a large number of stimuli (Stangor & McMillan, 1992). It appears plausible that comprehensive and pessimistic media coverage contributed to the formation of the widespread belief that the VAT increase will lead to

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