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Silke Bambauer-Sachse, University of Fribourg, Switzerland
Angélique Dupuy, University of Fribourg, Switzerland

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ABSTRACT

This paper examines effects of price promotions on changes of internal reference prices by analyzing moderator effects of price confidence, involvement, and the saving presentation. The results of the empirical study show how marketers should communicate price promotions to avoid strong reductions of consumers’ internal reference prices.

INTRODUCTION

In recent time, an increase of price-related advertising campaigns, specifically price promotions or price comparisons, can be observed (Chandrashekar and Grewal 2006; DelVecchio, Krishnan, and Smith 2007; Howard and Kerin 2006; Tsios and Hardesty 2010). Such advertising campaigns aim to positively influence consumers’ purchase intentions and many studies provide empirical support for this effect (Ailawadi and Neslin 1998; Chen, Monroe, and Lou 1998; Grewal et al. 1998; Gupta 1988; Gupta and Cooper 1992; Kumar and Leone 1988; Sun 2005). However, these studies only look at positive effects of price-related advertising and neglect the fact that intensively highlighting information about reduced prices can at the same time have negative effects through other paths. One such negative effect could be that providing people with information about reduced prices might lead to a reduction of consumers’ internal reference prices which in turn could lead to a lower willingness to pay as well as to a lower willingness to purchase products at the regular price. Such effects have not yet been covered by many studies. In addition, the existing studies analyzed rather basic effects and did not look at conditions under which a reduction of consumers’ internal reference prices might be more or less strong.

Thus, the first objective of this study is to examine effects of price promotions (displaying the amount of the saving and the reduced price) on consumers’ internal reference prices. The second objective is to identify conditions under which the reduction of the internal reference price is less strong. In this study, three variables, which represent such conditions and proved to play an important role in the formation of internal reference prices in previous studies (Chandrashekar and Grewal 2003, 2006; Grewal et al. 1998; Thomas and Menon 2007), are analyzed: involvement, price confidence, and the saving presentation format (“% off” vs. “amount off”).

Product involvement refers to the consumers’ degree of personal interest into or personal relevance of a product category (McQuarrie and Munson 1992). Consumers have a higher motivation to process product-related information (e.g., price information) about high-involvement products than about low-involvement products (Laurent and Kapferer 1985). Price confidence refers to the idea that consumers are more or less confident with their price estimates and as a consequence, such consumers are more or less likely to use these estimates in order to evaluate an actual price (Mazumdar and Monroe 1992).

These conceptualizations suggest that price confidence and involvement are independent constructs. Whereas price confidence is a rather person-specific variable, product involvement is a rather product category-specific variable. Furthermore, independently of the extent of information processing, consumers can be more or less confident about the result of the information processing. Thus, with regard to the context considered here, it can be argued that more or less intensive processing of price information in the case of high or low involvement can result in the formation of a reference price the consumers are more or less confident about.

The study presented here adds to the existing body of research by analyzing interaction effects that were not examined in the context of effects of price promotions on changes of internal reference prices before. From a consumer research perspective, such a simultaneous analysis of these interaction effects is important because the results of such an analysis enable consumer researchers to better understand consumers’ adaptions of their internal reference prices depending on their individual level of price confidence as well as depending on product category-related involvement under the alternative conditions of being faced with a “% off” versus an “amount off” saving presentation format.

In addition to covering research gaps left by previous studies, the paper addresses marketers by showing which saving presentation format (“% off” vs. “amount off”) should be used under which involvement and price confidence conditions in price promotion ads in order to avoid a strong reduction of consumers’ internal reference prices.

EMPIRICAL BACKGROUND

Despite the considerable number of studies on internal reference prices, the number of studies that examine moderator effects of price confidence, involvement, and saving presentation format in the context of effects of price promotions on changes of the internal reference price is limited.

Previous studies rather examined the formation or the type of the internal reference price (Briesch et al. 1997; Rajendran and Tellis 1994), the use of the internal or external reference prices (Chandrashekar and Jagpal 1995; Liefeld and Heslop 1985; Mayhew and Winer 1992; Moon, Russell, and Duvvuri 2006), the impact of the level of the external reference price (Biswas and Blair 1991; Biswas et al. 1999; Burman and Biswas 2004; Compeau and Grewal 1998; Frankenberger and Liu 1994; Lichtenstein and Bearden 1989; Urbany, Bearden, and Weibull 1988), or the impact of semantic cues (Lichtenstein, Burton, and Karson 1991).

There are only a few studies that analyzed effects of price promotions on internal reference prices. Table 1 gives an overview of the objectives and most important findings of these studies in a chronological order.

Most of the studies summarized in table 1 support well the assumption that price promotions lead to a reduction of internal reference prices. However, these studies focused on very few variables and did not examine conditions (e.g., consumers’ price confidence and involvement) under which price promotions with different saving presentation formats have more or less strong effects on internal reference prices. Furthermore, only a few studies (Chandrashekar and Grewal 2003, 2006; Sinha and Smith 2000) measured the internal reference price before and after exposure to the price promotion, thus the change of the internal reference price that can be unambiguously assigned to the examined independent variable. These research gaps will be closed by the new study presented below.

Three other studies examined the moderating role of involvement (see table 2), but in slightly different contexts.
Table 1  
Studies on Effects of Price Promotions on Internal Reference Prices

<table>
<thead>
<tr>
<th>Study</th>
<th>Objective</th>
<th>Major findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diamond and Campbell (1989)</td>
<td>Examined the effect of different types of promotions on reference prices (RP).</td>
<td>The monetary promotion (discount) reduces the RP while the non-monetary promotion (premium attached, extra product) does not.</td>
</tr>
<tr>
<td>Lattin and Bucklin (1989)</td>
<td>Analyzed, among other questions, the formation of consumers’ reference prices after exposure to a brand promotion.</td>
<td>High exposure to a brand’s promotional activity reduces the accordingly formed reference price.</td>
</tr>
<tr>
<td>Sinha and Smith (2000)</td>
<td>Examined, among other questions, the effects of three deal types on internal reference prices.</td>
<td>Consumers’ internal reference prices are not affected after seeing the deal once.</td>
</tr>
</tbody>
</table>

Table 2  
Studies on the Moderating Role of Involvement

<table>
<thead>
<tr>
<th>Study</th>
<th>Objective</th>
<th>Major findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chandrashekaran and Grewal (2003)</td>
<td>Examined effects of the advertised reference price (ARP) and the moderating role of involvement on the change of internal reference price.</td>
<td>Low involvement consumers show a stronger change of the internal reference price into the direction of the ARP than high involvement consumers.</td>
</tr>
<tr>
<td>Chandrashekaran (2004)</td>
<td>Examined, among other questions, effects of the advertised reference price (ARP) and the moderating role of involvement on consumer evaluations (transaction value, acquisition value and purchase intention).</td>
<td>Under high involvement, consumer evaluations are not influenced by the ARP. Under low involvement, consumer evaluations are positively influenced by the ARP.</td>
</tr>
<tr>
<td>Howard and Kerin (2006)</td>
<td>Examined, among other questions, effects of the advertised reference price (ARP) (absent vs. present) and the moderating role of involvement on price attitudes.</td>
<td>Under high involvement, consumers’ price attitudes are more favourable if the ARP is present. Under low involvement, there is no difference in consumers’ price attitudes depending on whether the ARP is present or absent.</td>
</tr>
</tbody>
</table>

Table 3  
Studies on the Role of the Saving Presentation Format

<table>
<thead>
<tr>
<th>Study</th>
<th>Objective</th>
<th>Major findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chandrashekaran and Grewal (2006)</td>
<td>Examined, among other effects, the impact of the saving presentation format on changes of the internal reference price (IRP).</td>
<td>The change of the IRP is stronger if the saving information is provided as “% off” than in the case where the saving presentation is provided as “amount off”.</td>
</tr>
<tr>
<td>DelVecchio et al. (2007)</td>
<td>Examined, among other questions, the effect of promotion framing (“% off” vs. “amount off”) on price expectations.</td>
<td>An “amount off” format leads to a stronger reduction of the price expectation than a “% off” format.</td>
</tr>
</tbody>
</table>

The first study presented in table 2 shows that, under low involvement, consumers’ formation of reference prices is more strongly influenced by available price information than under high involvement. The other two studies show that the effects of reference prices on evaluations or attitudes are somehow mixed under different involvement conditions. The findings, specifically of the first study, provide support for the importance of the involvement in the context of the formation of reference prices. However, none of the previous studies specifically examined the role of involvement in the context of effects of price promotions on internal reference prices or interactions of involvement and other moderator variables. Thus, it is necessary to examine such effects in the new empirical study presented below.

In addition, two studies on effects of the saving presentation format can be found (see table 3).

The conclusion that can be drawn from the two studies summarized in table 3 is that the “% off” format leads to greater reduction of the internal reference price/the price expectation than the “amount off” format, whereas the opposite effect occurs when price expectation is considered as target variable. Thus, it will be interesting to examine the role of the saving presentation format, and more specifically, possible interactions between the saving presentation format, involvement, and price confidence in the more complex context of effects of price promotions on internal reference prices.

Up to our knowledge, no study has yet examined the moderating role of consumers’ price confidence in the context of effects of price promotions on internal reference prices.

The gaps identified in the existing studies presented above will be addressed in the new study presented below. The research hypotheses that represent the basis of the empirical study will be developed in the next section.
DEVELOPMENT OF THE RESEARCH HYPOTHESES

For the situation of being faced with new price information, it can be assumed that consumers – consciously or unconsciously - revise their internal reference price by including the new price information (Yadav and Seiders 1998). More specifically, when faced with a reduced price and/or the amount of the saving, consumers are believed to incorporate the new price information into their internal reference price. As internal reference prices are usually formed through complex mechanisms considering several types of price information (Briesch et al. 1997; Mayhew and Winer 1992; Mazumdar and Papalia 2000; Rajendran and Tellis 1994; Winer 1986), it can be assumed that encountering a single piece or a few pieces of new price information leads to a rather heuristic incorporation into the internal reference price (Chandrashekaran and Grewal 2003; Frankenberg and Liu 1994; Yadav and Seiders 1998). A heuristic which is appropriate to explain how consumers incorporate a single/a few piece(s) of new price information into their internal reference price, is anchoring and adjustment. The new price information encountered serves as an anchor toward which the internal reference price is adjusted. As one single/a few piece(s) of price information is/are not able to change the internal reference price completely, this adjustment will be insufficient. The type of the price information that represents the anchor value and the extent of the adjustment of the internal reference price into the direction of the anchor are believed to depend on consumers’ price confidence because price confidence plays an important role in price judgments (Mazumdar and Monroe 1992; Thomas and Menon 2007), on involvement (Chandrashekaran and Grewal 2003; Vaidyanathan and Aggarwal 2001) as well as on the saving presentation format (Chandreshkar and Grewal 2006; DeVecchio et al. 2007).

Highly price-confident consumers are less influenced by price promotions (Bearden, Hardesty, and Rose 2001) and less likely to considerably change their internal reference price because of encountering a single piece of new price information (Yadav and Seiders 1998). Less price-confident consumers are more likely to be influenced by environmental information (Bearden et al. 2001; Yadav and Seiders 1998) and pay high attention to additional price information provided (Dutta 2011), such as the saving information and the reduced price in a price promotion ad and incorporate such information to a larger extent into their internal reference price than highly price confident consumers. These arguments lead to the first hypothesis:

Hypothesis 1: Price promotions lead to stronger reductions of the internal reference price for less than highly price-confident consumers.

Beyond the effect of price confidence, possible effects of involvement and the saving presentation format need to be explained theoretically. In the case of low involvement, consumers generally show an effortless and context-driven processing, and are open to promotional signals in ads (Chandrashekaran 2004; Howard and Kerin 2006; Petty, Cacioppo, and Schumann 1983). In the case of high involvement, consumers are motivated to spend a considerable effort to intensively process information (Petty et al. 1983). Consequently, consumers form internal reference prices on the basis of logically relevant facts (Lichtenstein, Bloch, and Black 1988; Zaichkowsky 1988) that they carefully process because, due to their high involvement, they are more skeptical of advertised price claims (Chandrashekaran and Grewal 2003).

If less involved consumers are faced with a price promotion ad that contains the saving information in the “% off” format, the only clearly available price information that can be easily processed is the reduced price. As the “% off” information is more difficult to process than the “amount off” information (DeVecchio et al. 2007; Lee and Han 2002; Morwitz, Greenleaf, and Johnson 1998), less involved customers are not motivated to further process the percentage indicating the saving amount. Thus, in this case, the reduced price represents the anchor toward which the internal reference is adjusted.

If less involved consumers encounter a price promotion ad that contains the “amount off” saving presentation format, two types of price information are available: the reduced price and the amount of the saving. Although the saving amount represents irrelevant information with regard to the internal reference price, this price information is likely to be considered because even irrelevant anchors can have effects on consumers’ judgments (Brewer and Chapman 2002; Switzer and Sniezek 1991; Wilson et al. 1996) and such effects might specifically exist in the case of low involvement. Particularly under these conditions, the so-called “illusion of knowledge effect” according to which additional information reduces the accuracy of the estimation (Hall, Arias, and Todorov 2007) is likely to occur. Thus, less involved consumers being faced with two types of price information (saving amount, reduced price), tend to rely on all types of available information, even on less relevant information. When incorporating the two types of price information into their internal reference price, consumers perceive this price information in terms of a partitioned price. This phenomenon can be explained as follows: when forming internal reference prices, consumers try, if possible, to consider several regular prices. When faced with a price promotion ad that displays the amount of the saving and the reduced price, the regular price is provided in terms of a partitioned price that consists of a larger price component (the reduced price) and a smaller price component (the saving). Research on the processing of partitioned prices (Gierl and Bamburg-Sachse 2007) as well as research on willingness to pay for product bundles (Gaeth et al. 1990) suggests that consumers who are not motivated to engage in exact processing tend to come up with price estimates/levels of willingness to pay that result from an averaging procedure that assigns about equal weights to the components to be processed. Thus, for the case considered here, it can be argued that less involved consumers who are faced with the reduced price and the amount of the saving, are not motivated to fully process the partitioned price information and rather build an average value out of the two components that represents the anchor toward which they adjust their internal reference price. As the anchor value resulting in this case is lower than the anchor value used in the “low involvement, “% off” condition, the reduction of the internal reference price is expected to be stronger in the “amount off” than in the “% off” condition. These arguments lead to the following hypothesis:

Hypothesis 2a: In the case of low involvement, reductions of the internal reference price are stronger if the “amount off” format is used (compared to the “% off” format).

If highly involved consumers are faced with a price promotion ad containing the reduced price and the “% off” saving information, it is, as already argued for low involvement, comparatively difficult to calculate the regular price (DeVecchio et al. 2007; Lee and Han 2002; Morwitz et al. 1998), even if highly involved consumers might be motivated to do so. Thus, the only available price information that can serve as an anchor toward which the internal reference price is adjusted is the reduced price.

If highly involved consumers encounter a price promotion ad displaying the reduced price and the amount of the saving, they are
highly motivated to calculate, based on the price information provided, the regular price because this is the most diagnostic type of price information they can use in order to modify their internal reference price. Thus, when incorporating the new price information into their internal reference price, consumers are likely to either use the calculated regular price or the range of plausible values from the reduced price to the regular price as an anchor. The latter is plausible because consumers generally tend to show a downward bias in their price estimates if faced with price promotions (Krisha et al. 2002). Note that highly involved consumers will not consider the amount of the saving as independent price information, but they will rather use it to calculate the regular price.

Thus, comparing the anchor used by highly involved consumers when faced with the “% off” saving format presentation to the anchor used when encountering the “amount off” saving format presentation, it can be concluded that the stronger reduction of the reference price can be expected for the “% off” condition. These arguments lead to the following hypothesis:

**Hypothesis 2b:** In the case of high involvement, reductions of the internal reference price are stronger if the “% off” format is used (compared to the “amount off” format).

The above derived hypotheses will be tested in the empirical study presented below.

**EMPIRICAL STUDY**

**Product Category**

In order to examine whether price promotions have different effects on consumers’ internal reference prices for low and high involvement products, two appropriate test products had to be chosen. The products used were T-shirts and jeans which have the advantage that they differ with regard to product involvement, but can both be assigned to the same product category (clothing).

**MEASURES**

In order to make manipulation checks, product involvement was measured by four items such as “is important to me” (Alpha = 0.81) following the suggestions of Laurent and Kapferer (1985) as well as of McQuarrie and Munson (1992). The internal reference price was measured using eight dimensions (normal/fair/average/minimum/maximum/appropriate price, last price paid, price expected for the next purchase, Alpha = 0.97) recommended by Chandrashekaran and Grewal (2003) as well as Chandrashekaran (2004). Price confidence was measured using two statements such as “I am confident about my price estimation” (r = 0.71) following the recommendations of Biswas and Sherrell (1993) as well as of Thomas and Menon (2007).

The high r-values and the high correlation show that the chosen items are appropriate to reliably measure the model variables. Thus, the overall variable values used in the data analyses were calculated as mean values of the single items that were intended to measure the respective variable.

**SAMPLE, EXPERIMENTAL DESIGN, AND PROCEDURE**

The sample of the empirical study consisted of 240 respondents (54% women, 46% men). The age of the participants ranged from 16 to 61 years, the average age was 28.3 years.

The study was based on a 2 x 2 (saving presentation format: “% off” vs. “amount off”) x 2 (product involvement: low vs. high) design. Note that the variable price confidence that was also considered in the data analyses was not manipulated, but measured. Table 4 gives an overview of the test ads that were used to implement the experimental design.

**Table 4**

**Test Ads**

The procedure of the data collection was as follows. The respondents were assigned to one of the four groups resulting from the experimental design and were asked to fill in the respective questionnaire. The questionnaire contained in the first place a battery of measures that aimed to capture the initial reference price. Afterwards, the respondents had to indicate their price confidence as well as their involvement in the respective product category. In the next step, the respondents were presented with an ad displaying the product and the price information and they were then asked to fill in the reference price measures a second time. At the end of the questionnaire, the respondents had to indicate their age and gender.

**DATA ANALYSIS AND RESULTS**

Before discussing the main results of the study, the results of the manipulation check for involvement will be presented. The results of a t-test show that the measured involvement is significantly higher for jeans (M = 4.48) than for T-shirts (M = 3.81; t = 3.91, p < .001). Thus, the involvement manipulation based on choosing jeans (T-shirts) as high (low) involvement products was successful. In addition, it is important to show that the variables involvement and price confidence are not too highly correlated because otherwise, it would not be possible to treat these variables as independent conditions. The correlation between these variables is rather low (r = 0.34).

Now, the main results will be presented. Figure 1 gives an overview of the changes of the reference prices depending on the saving presentation format, involvement, and consumers’ price confidence. The results are simultaneously differentiated according to all variables because, on the basis of this type of result presentation, it is possible to test all hypotheses.

The results presented in figure 1 basically show that providing information about a price promotion leads to a considerable reduction of the internal reference price (main effect of the information about the price promotion: F = 11.83, p < .01). This result is consistent with the finding of Grewal, Monroe, and Krishnan (1998) that there is a positive relation between the advertised selling price and the internal reference price. This finding is specifically remarkable because the participants of the study were faced only once with this information.

In order to test the first hypothesis, the results for low and high price confidence are compared for all four experimental conditions. As assumed in hypothesis 1, the reduction of the reference price is stronger for less price-confident consumers in three out of the four cases (low involvement, “% off”: $\Delta_{\text{low price confidence}} = 9.88$, $\Delta_{\text{high price confidence}} = 6.34$). The results are statistically significant ($t = 5.27$, $p < .001$) as well as of the high involvement, reductions of the reference price are stronger if the “% off” format is used (compared to the “amount off” format).
Do Price Promotions Lead to a Reduction of Consumers’ Internal Reference Price and If So, under Which Conditions Is This Effect Less Strong?

In the case of low involvement and the “amount off” presentation format, there is no difference in the reduction of the reference price between more and less price-confident consumers (low involvement, “amount off”: $\Delta_{\text{low price confidence}} = 5.86$, $t = -0.24$, $p > .10$; high involvement, “amount off”: $\Delta_{\text{low price confidence}} = 6.59$, $t = -0.19$, $p > .10$). Thus, hypothesis 2a is only supported for less price-confident consumers. A possible explanation for the non-significant effect for highly price-confident consumers could be that these consumers are, due to their high price confidence, less influenced by price promotions and thus, assign a lower weight to the saving amount than to the reduced price when processing these pieces of price information through averaging in the “amount off” format condition. Consequently, the resulting anchor is not (much) different from the anchor in the “% off” condition and thus the reductions of the internal reference price are of about the same extent.
Furthermore, the results show for highly involved, but less price-confident consumers that the reduction of the internal reference price is stronger if the saving presentation format “% off” is used (“% off”: $\Delta_{\text{IRP}} = 23.41 \text{ vs. “amount off”: } \Delta_{\text{IRP}} = 5.86; t = 5.57, p < .001). Although the same pattern results for highly involved and highly price-confident consumers, this difference is not significant (“% off”: $\Delta_{\text{IRP}} = 8.71 \text{ vs. “amount off”: } \Delta_{\text{IRP}} = 6.59; r = 0.74, p > .10$). Thus, hypothesis 2b is only supported for less price-confident consumers. A possible explanation for the non-significant effect for highly price-confident consumers could be that these consumers are generally less influenced by price promotions than less price-confident consumers. Thus, if they realize that it is not possible to calculate the regular price out of the price information provided, they might adjust their internal reference price to a lesser extent into the direction of the reduced price than less price-confident consumers.

**CONCLUSION**

The starting point of this paper was the observation that, due to an increasing competition in many consumer product categories, marketers increasingly promote price reductions with the intention to increase purchase intentions. This observation brought up the idea that beyond having such positive effects, advertising reduced prices might at the same time have negative effects through reducing consumers’ internal reference prices. Such effects would be negative from the marketer’s perspective because previous research has shown that the internal reference price is linked to the price people are willing to pay (Ranyard, Charlton, and Williamson 2001). Consequently, from both a consumer researcher’s and a marketer’s perspective, it stood to reason to examine effects of price promotions on consumers’ internal reference price. In order to go beyond what was analyzed in previous studies, the study presented here looked in more detail at such effects by differentiating between low and high involvement, low and high price confidence and different presentation formats of the saving information (“% off” vs. “amount off”).

The findings of the empirical study show that being faced with a price promotion leads to a downward correction of the internal reference price, even after only one contact with the information about the price reduction and even if consumers are highly price-confident. However, for highly price-confident consumers, the reduction of the reference price is less strong than for less price-confident consumers. In addition, the results show that if less price-confident consumers encounter a price promotion, the effects depend on involvement and the saving presentation format. If less involved consumers are addressed, the “amount off” saving presentation format has the most detrimental effects, whereas in the case where highly involved consumers are targeted, the reduction of the internal reference price is strongest when the “% off” format is used.

These findings do not only provide a valuable contribution to existing research in the field of effects of price promotions on reference prices, but also suggest that marketers should be aware of the fact that already one contact with a reduced price leads to a reduction of consumers’ internal reference prices independently of their price confidence or the product category. Thus, marketers should carefully consider the advantages and disadvantages when deciding on a price promotion. Furthermore, the results provide a better understanding of how marketers should communicate saving information to consumers in a way that reduces the observed effects of price reductions on internal reference prices. Specifically if marketers of low (high) involvement products target less price-confident consumers, they should choose the “% off” (“amount off”) saving presentation format in order to minimize negative effects on consumers’ internal reference prices.

For future research, it might be interesting to examine effects of an increasing number of contacts with price promotions in order to know whether consumers could be desensitized to the price promotion information due to the repetition effect. Furthermore, it might be interesting to add willingness to pay and purchase intentions to the research model in order to know to what extent the change of internal reference price influences such typical consumer response variables. Moreover, it might be of interest to simultaneously examine positive and negative effects of price promotions through different paths. Finally, it could be interesting to examine whether a price promotion in combination with the comparison with a related or unrelated low- or high-price product can influence the internal reference price as it was examined for willingness to pay by Adaval and Wyer Jr. (2011) in a slightly different context.

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