Effects of Price Partitioning on Product Evaluation
by Heribert Gierl and Silke Bambauer-Sachse

Price partitioning refers to the strategy of dividing the price of a product, which can only be bought as a whole, into two or more parts. Only a few authors have yet analysed the effects of this pricing strategy. They have derived conflicting recommendations on the question of whether price partitioning is beneficial for the marketer. In this article we build on existing arguments and add to the body of research by extending the theoretical background and presenting results of a new empirical study on the effects of price partitioning. The results of our study show that price partitioning leads to a more favourable product evaluation than do total prices if consumers spend a little cognitive effort on price processing and if low surcharges are used.

Keywords
Partitioned pricing, price partitioning, anchoring and adjustment, averaging, prospect theory, pricing policy, price evaluation, product evaluation

1. Introduction
Consumers sometimes face the situation that some products or services can only be bought in combination but are divided into several components which are charged single prices (Bertino/Wathieu 2005, p. 3; Lee/Han 2002, p. 27). The most popular form is the division into two components. When booking a flight for example, people see separate prices for the flight and airport taxes. Other examples are separate prices for hotel and parking, a club membership and the joining fee, a product and the shipping fee of mail order purchases, a meal and the cover charge (e.g., in Italian restaurants), and an apartment rental fee and the additional charges. In all of the listed examples it is neither possible nor beneficial that consumers buy only one of the two components. Morwitz/Greenleaf/Johnson (1998) call this strategy partitioned pricing, and they refer to the larger partitioned price component as the base price and to the smaller component as the surcharge. In marketing practice, surcharges often are shown in monetary terms, but sometimes they are presented as a percentage of the base price. Some organisers of events like motor sports events or baseball games charge a ticket price and a percentage of this price as a handling fee. Some authors assume that price partitioning increases consumer demand if it is implemented appropriately, i.e. using surcharges which can be comparatively easily processed (Chakravarti et al. 2002, p. 225; Morwitz/Greenleaf/Johnson 1998, p. 453; Xia/Monroe 2004, pp. 64, 71). These authors’ argument is that, even if the surcharge can be easily processed, consumers might disregard the surcharge somehow when processing the components of a partitioned price and thus assume a comparatively low total price which leads to a higher purchase intention. However, Ayres/Nalebuff (2003) argue that various deficiencies in price transparency are harmful to marketers, because consumers might avoid purchasing products with masked price components and Lee/Han (2002) derive from the results of their study on price partitioning that marketers should use total prices. Thus, arguments in favour of and against price partitioning can be found in the literature. These arguments can be summarised as shown in Table 1.

Product or price bundles must be distinguished from partitioned prices, because a consumer buying a product bundle pays one price for several products which can usually be bought as separate items. Whereas there are many studies on price bundling (e.g. Adams/Yellen 1976;
Arguments in favour of price partitioning

• The estimated total price might be lower than the real total price.
• The perceived price-performance ratio can be more positive than the real price-performance ratio.
• Consumers are enabled to understand the composition of the total price.

Arguments against price partitioning

• Partitioned prices might be less transparent than total prices for the consumer.
• Partitioned prices are more complex than total prices from the consumer point of view.
• Consumers might show reactance with regard to products with partitioned prices.

Table 1: Arguments in favour of and against price partitioning

This article adds to the existing body of research because we analyse the effects of price partitioning versus using total prices in more detail than it has been done in the studies cited above by including mediator variables between price presentation and the target variable 'product evaluation'. In addition to addressing researchers, our article addresses marketers who have to decide whether to use partitioned or total prices. In industries where partitioned prices are common (e.g. tourism industry, online shopping, leisure industry etc.), marketers need to know if using partitioned prices is beneficial. In industries where partitioned prices are not common but where they could be applied to distance one marketer from its competitors, marketers might also be interested in possible advantages and disadvantages of partitioned prices. Our approach offers new insights in the mechanisms underlying price partitioning effects and thus enables marketers to plan pricing strategies that are more target-orientated when choosing between total prices and partitioned prices or when deciding which type of price partitioning to apply. In the following sections we present the previous empirical findings on price partitioning, theoretical explanations of these findings, our research hypotheses, and a new study where our hypotheses are tested.

2. Previous Empirical Research

The starting point of our study was the observation that several authors reported partly contradictory findings on the effects of price partitioning which lead to either a recommendation or a rejection of this pricing strategy. Therefore we will start with presenting the findings of these studies.

Morwitz/Greenleaf/Johnson (1998) are the first authors who investigated effects of price partitioning by conducting two experiments based on between-subjects designs. In the first experiment, 199 students viewed a jar full of pennies and had to bid for this jar. One half of the students received the information that the jar’s price would be their bid plus 15 per cent whereas the second half of the students were informed that the purchase price would correspond to their bid. In the second experiment, 233 students who were divided into three sub-samples had to choose between two telephone brands. The price of one telephone (control telephone) was presented as an all-inclusive price to all respondents, whereas the price of the other telephone (target telephone) was either presented as an all-inclusive price (“including shipping and handling”), as a base price plus a dollar surcharge, or as a base price plus a percentage surcharge. Note that the target telephone had the same total price in all sub-samples. The authors derive from the results of their experiments that partitioned prices increase consumers’ purchase intention for a target stimulus compared to all-inclusive prices if a monetary surcharge is used.

Lee/Han (2002) replicated the experiment of Morwitz/Greenleaf/Johnson using computers and hi-fi systems as stimuli and 141 students as subjects. They compared the subjects’ responses to all-inclusive prices versus partitioned prices which consisted of a base price and a percentage surcharge by using a between-subjects design. Lee/Han concluded that price partitioning results in a negative attitude toward the brand and toward the retailer compared to using all-inclusive prices which contradicts the findings of Morwitz/Greenleaf/Johnson.

Chakravarti et al. (2002) used a scenario where 444 students had to imagine that they were shopping for a refrigerator in combination with an icemaker and a long-term warranty. The respondents received the information that the refrigerator could only be bought together with the icemaker and the long-term warranty. On the basis of a between-subjects design, subjects had to evaluate two offers (attitude toward the offer, purchase intention). One package was presented with an all-inclusive price, whereas the price of the other package was partitioned (monetary surcharge). The product total price and the...
technical features of the two offers were identical. The authors found that the bundle with the partitioned price was evaluated more favourably than the bundle with the total price which supports the results of Morwitz/Greenleaf/Johnson.

In a recent study, Xia/Monroe (2004) also tested the effects of price partitioning by comparing the findings from a 2 (surcharge amount) x 2 (monetary versus percentage surcharge) experimental group between-subjects design with a control group (total price condition). Note that the authors additionally included the surcharge type (shipping versus tax) as a further independent variable. 156 students had to read an online shopping scenario and had to imagine that they intended to buy a desktop PC. The results of this study show that price partitioning has positive effects on consumer price satisfaction as well as on purchase intention. However, a closer examination of these results shows that probably only the combination of a low surcharge and a percentage surcharge leads to a higher purchase intention (p. 68).

An experiment of Johnson/Herrmann/Bauer (1999) aimed at analysing price bundling effects and thus has parallels to the studies described above. The authors investigated different types of price bundling by using cars as test stimuli. Among other aspects they compared the response of potential car buyers to different types of price presentations using a between-subjects design (N = 90 car owners). The first group received an all-inclusive-price; the second group saw a base price plus monetary surcharges for three packages, and the third group saw the base price plus monetary surcharges for twelve additional car features. The total price and the car to be evaluated were the same across all conditions. They found that product evaluation (i.e. the attitude toward the product offer) was most positive in the case of the all-inclusive-price and most negative in the case of the highly de-bundled price. Note, that this experiment is not exactly comparable to research on price partitioning because the respondents of the second and third group would have had the possibility to buy the base version of the car without packages. Thus they might have evaluated the basic car version combined with the basic car price without considering the additional packages and their prices.

Summarising the results, three of the five studies showed a positive effect of price partitioning on the evaluation of products or other stimuli. Johnson/Herrmann/Bauer (1999) and Lee/Han (2002) reported a negative effect. However we have to mention that the studies presented differ slightly in the dependent variables the authors analysed (attitude toward the offer versus purchase intention). Thus, the differing results might also be partly due to this difference.

From our point of view, the studies described above report an overall effect of price partitioning which can be positive or negative depending on the relevance of different mental processes. We assume that price partitioning versus using total prices evokes positive as well as negative responses and hypothesise that the overall effect depends on the strength of the positive and negative processes. Therefore we subsequently analyse positive and negative mental processes in more detail.

3. Theoretical Background

In this section we develop an extended research model which aims at explaining the effects of price partitioning versus using total prices in more detail. Note that we only consider partitioned prices which consist of two components. We assume that the price presentation (i.e. price partitioning versus using total prices) has effects through consumers’ evaluation of the total price level as well as their belief about the marketer’s manipulative intent, and their perception of price structure complexity.

3.1. Effects on Consumer Evaluation of the Total Price Level

A product’s total price usually has a negative influence on the product’s attractiveness because, ceteris paribus, consumers prefer products with a comparatively low price. However, we do not consider exceptions of this basic assumption (e.g., Veblen effect, price-as-quality heuristic in the case of very inexpensive products).

Price partitioning versus using total prices can influence consumer evaluation of the product’s total price level. Xia/Monroe (2004) mention satisfaction with the price as a possible explanation for the positive effect of price partitioning versus using total prices on product evaluation. The authors define price satisfaction as an evaluation of the total amount of money consumers have to pay for the product. As price satisfaction can also cover other aspects such as the price-performance ratio or changes with respect to different kinds of reference prices, we will apply the term ‘evaluation of the total price level’ to use a more distinct term. In the following sections we present theoretical approaches which can serve to explain the effects of price partitioning versus using total prices on the consumers’ evaluation of the total price level.

Ignoring the Surcharge

One possible strategy to process partitioned prices is to simply ignore the surcharge (Morwitz/Greenleaf/Johnson 1998). If consumers use this strategy, price partitioning will have a positive effect on their evaluation of the total price level (i.e., they evaluate the total price as being comparatively low). In the case of a high surcharge relative to the base price, a large part of the total price is ignored which results in an even more positive effect. It is difficult to predict if either monetary surcharges or percentage surcharges are more likely to be ignored. However, calculating the sum of a base price and a percentage surcharge requires more cognitive effort than determining the sum of a base price and a monetary surcharge because in the first case, consumers have to multiply and...
The Anchoring and Adjustment Heuristic
People often perform estimation tasks e.g., consumers evaluate product quality, estimate dates of delivery, and forecast reactions of friends on their own purchase behaviour. Many authors argue that people use heuristics to fulfill such tasks (e.g. Block/Harper 1991; Davis/Hoch/Ragsdale 1986; Jacowitz/Kahneman 1995). Heuristics are rules which simplify the evaluation process. One important heuristic consists in relying on context information (Anderson 1971). Context information can provide an initial estimate (anchor value) from which people start to arrive at a final estimate. Therefore, such estimates are biased (adjusted) toward the initial estimate (Block/Harper 1991; Chapman/Johnson 1994; Davis/Hoch/Ragsdale 1986; Jacowitz/Kahneman 1995; Northcraft/Neale 1987). Anchoring and adjustment have been observed in several types of mental processing of context information. This heuristic has often been applied to explain the response to the repeated presentation of the same stimulus. For example, Jacowitz/Kahneman (1995) first asked one part of the respondents whether Chicago has more than 0.2 million inhabitants and the other part was asked whether Chicago’s population exceeds 6 million. In the next step the respondents had to estimate the number of inhabitants. The first half’s average estimate was 0.6 million and the second half’s estimate was 5.05 million. The numbers given in the trivial questions (i.e., 0.2 versus 6) served as anchors and, departing from these anchors, people insufficiently adjusted their estimates toward the true number of inhabitants. Similar experiments have been conducted by Northcraft/Neal (1987) and Plous (1989). Other authors used the anchoring and adjustment heuristic to explain responses to the presentation of the sequence of two totally different stimuli. For example, Tversky/Kahneman (1974) first had people spinning a wheel of fortune with numbers between 0 and 100 and they then asked the respondents to estimate the percentage of African countries belonging to the United Nations. The authors report that people who saw the number 10 (versus 65) on the wheel of fortune estimated that 25 (versus 45) percent of the African countries were in the United Nations. Further experiments of this type of information processing have been published by Wansink/Kent/Hoch (1998) and Wilson et al. (1996).

Neither of the two types of information processing described above have parallels to processing partitioned prices because while processing partitioned prices, consumers neither see the same stimulus twice nor do they see stimuli which are described by different dimensions. In the context considered here, we assume that consumers process two components of the same stimulus in a sequence. These two components are the base price and the surcharge. Here we see that a sequence exists because the base price is the major component and the surcharge is the minor component. As Morwitz/Greenleaf/Johnson (1998) argue that the major component of a stimulus is processed prior to the minor component, the estimated total price should be biased toward the base price. Assuming a person receives the information that the price is € 17.95 plus € 4.39, this price information results in a correct perception of the base price and an initial vague belief about the total price (e.g. between € 21 and € 24), whereas the arithmetically correct price is € 22.34. In this case a high cognitive effort would be needed to calculate that total price. Insufficient adjustment predicts that this person departing from the base price attempts to find a plausible value of the total price which results in an underestimation. Thus the base price (€ 17.95) serves as an anchor stimulus, and the total price is the focal stimulus which is characterised by uncertainty. Insufficient adjustment means that people tend to estimate a total price which is located near the base price within the plausible interval. This example is visualised in Figure 1. The same argument is used by Yadav (1994) who analyised evaluations of product bundles consisting of a major product component and a minor product component.

Provided that consumers apply the anchoring and adjustment heuristic we expect positive effects of price partitioning on consumers’ estimation of the total price level which will result in a more positive evaluation of the total price. In the case of a high surcharge compared to a low surcharge (same total price), the base price decreases (e.g., € 15.95 plus € 6.39) but the limits of the interval including beliefs about the total price do not necessarily have to change. Thus the surcharge amount is neither expected to increase nor to decrease the positive effect of price partitioning on the estimation of the total price level. In the case of a percentage surcharge it is more difficult to determine the correct total price than in the case of a monetary surcharge. Therefore the interval reflecting the belief about the total price is supposed to be broader (e.g., between € 20 and € 25 in our example). Thus, the estimated total price is expected to be lower provided that the base price does not depend on the presentation mode of the surcharge.

Averaging
Faced with components of a stimulus people might also use other heuristics to process this information. One heu-
ristic which is often discussed is ‘averaging’ (Anderson 1971 and 1981; Simonin/Ruth 1995; Troutman/Shanteau 1976). We cite the experiment conducted by Gaeth et al. (1990) to illustrate the mechanism which underlies averaging. In their study products served as components and the resulting product bundle was the target stimulus. One of their experimental groups first saw a video recorder of poor quality and a video tape of moderate quality and the respondents had to indicate their willingness to pay (WTP) for each item separately. The respondents then received the information that both items could only be bought in a bundle and they had to express their WTP again. The authors calculated the difference of WTP and found that WTP was + $ 13.0 in the bundle constellation. A second experimental group passed the same procedure, but the video recorder was of high quality. The authors found that WTP was – $ 12.8 in the bundle constellation. The observation that the changes in WTP are almost equal ($ 13.0 ≈ $ 12.8) is explained by the assumption that the minor component (i.e., the video tape) disproportionately contributed to the bundle’s evaluation. Compared to the components’ real weights the minor component’s weight was overestimated and the major component’s weight was underestimated. The findings of Gaeth et al. even indicate equal weights of both components. To our knowledge literature does not provide reasons for why consumers use averaging to process components of a product bundle. A possible explanation is the fact that people do not only consider the components’ valence (i.e., contribution to the bundle, say 5 : 95 videotape in relation to video recorder), but also the cognitive effort (CE) to evaluate their quality which might be equal for both components. This phenomenon causes an underestimation of the major component’s contribution to the bundle and an overweighing of the minor component’s contribution to the bundle since $(5+CE) : (95+CE)$ exceeds 5 : 95. We generalise this argument by assuming that the evaluation of any stimulus consists of the valence of its components as well as of the cognitive effort which is needed to determine the valence of each component. As the cognitive effort is not necessarily proportional to the components’ valence, minor components are ascribed a higher weight than they have in fact which results in averaging.

In order to determine the effect of the surcharge amount on the total price evaluation, we assume $v = (1 - e^{a})/(1 - e^{b})$ to reflect the curve in the loss domain ($x, v \leq 0$, and sensitivity coefficient $a > 0$). The sum of the evaluated components, i.e. of the base price ($b < 0$) and the surcharge ($s < 0$), is $(1 - e^{a})/(1 - e^{b}) + (1 - e^{s})/(1 - e^{b})$. This sum exceeds the overestimation of the minor component (i.e., the surcharge) and thus a higher estimate of the total price. Assume for example that a total price of 22.34 is partitioned into the components 21.38 and 0.96. With regard to the argument of averaging a person evaluates both prices (i.e., 21.38 and 0.96), which means spending a cognitive effort twice. Thus, this person is supposed to overestimate the contribution of the surcharge to the total price since $(0.96 + CE) : (21.38 + CE)$ exceeds 0.96 : 21.38. These assumptions are shown in Figure 2.

If people use averaging to process partitioned prices they tend to overestimate the total price which results in a negative effect of price partitioning on the evaluation of the total price level. However this model is not precise enough to forecast whether this effect depends on the surcharge amount or the surcharge presentation as a percentage or as a monetary surcharge.

**Prospect Theory**

Finally, the value function of the prospect theory can also be applied to explain responses to partitioned prices. Kahneman/Tversky (1979) assume that people who evaluate any stimulus in relation to an individual reference point weigh losses in relation to the reference point generally more heavily than gains of identical magnitude (loss aversion), and are less sensitive to deviations from the reference point with an increasing deviation. We assume that consumers compare a possible purchase to the decision against the purchase. In the purchase case the product’s benefit can be interpreted as the gain and expenditures for the product as the loss. In the non-purchase case consumers neither have gains nor losses. Thus the reference point to evaluate expenditures for a product would be zero. Due to the sensitivity of the evaluation, the sum of two negatively evaluated components exceeds the evaluation of the sum of these components. Therefore price partitioning is supposed to have a negative effect on the evaluation of the total price level. Figure 3 illustrates the assumed effect.

---

**Figure 2**: Processing of partitioned prices on the basis of averaging

**Note**: $v = \text{estimation of price plus cognitive effort}$. $v(21.38) + v(0.96) > v(22.34) + v(0)$.  

---

the evaluation \((1-e^b)/(1-e^a)\) of the single total price \((t < 0)\) at its highest if \(b = t/2\). The more the surcharge converges to the half amount of the total price, the higher is the difference between \(v(\text{base price}) + v(\text{surcharge})\) and \(v(\text{total price})\). Note that the surcharge cannot exceed the half amount of the total price per definition. With an increasing amount of the surcharge relative to the base price, the negative effect of price partitioning on consumer evaluation of the total price level is expected to increase.

**A Cognitive Resource Perspective**

Considering the strategies of how consumers might cope with price partitioning we have conflicting assumptions on possible effects on the total price evaluation. Table 2 summarises the expected outcomes.

The cognitive effort which consumers spend to process partitioned prices might be a helpful variable to explain why consumers choose one of these strategies to process partitioned prices and subsequently to evaluate the overall price level (Morwitz/Greenleaf/Johnson 1998, p. 454). A consumer who is distracted for example might not have enough cognitive resources to process partitioned prices, which might result in ignoring the surcharge or using the anchoring and adjustment heuristic. Consumers who have enough cognitive resources to process partitioned prices are supposed to concentrate on both price components equally which could lead to averaging or applying the value function. Thus we expect

**H1:** If consumers spend a little (versus a high) cognitive effort, price partitioning (compared to using total prices) has a positive (negative) effect on the evaluation of the total price level.

---

**Table 2: Assumed effects of price partitioning depending on processing strategy**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Consumers’ evaluation of the total price level</th>
<th>Surcharge amount relative to the base price</th>
<th>Surcharge presentation (monetary versus percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignoring the surcharge</td>
<td>very positive</td>
<td>increasing positive effect</td>
<td>-</td>
</tr>
<tr>
<td>Anchoring and adjustment</td>
<td>moderately positive</td>
<td>-</td>
<td>increases the positive effect if percentage</td>
</tr>
<tr>
<td>Averaging</td>
<td>negative</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Applying the value function</td>
<td>negative</td>
<td>increasing negative effect</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: \(v = \) value. 

\(t = \) total price, \(b = \) base price, \(s = \) surcharge. 

\(v(\text{base price}) + v(\text{surcharge}) < v(\text{total price})\).
Unfortunately, the authors who have already investigated the effects of price partitioning have not controlled for the cognitive effort the respondents spent on processing the partitioned prices. However, differences in cognitive efforts might be an explanation for the divergent findings. Furthermore we assume

\[ H2: \text{ The effect of price partitioning on the evaluation of the total price level increases with the surcharge amount relative to the base price.} \]

\[ H3: \text{ If consumers spend a little cognitive effort, the effect of price partitioning on their evaluation of the total price level is higher in the case of a percentage surcharge than in the case of a monetary surcharge. If consumers spend a high cognitive effort this relationship does not exist.} \]

### 3.2. Effects on Consumer Belief about Marketer’s Manipulative Intent

Research on price effects has shown that consumers sometimes are interested in the marketer’s motives of applying certain pricing strategies. This phenomenon occurs when prices are unusual, e.g., in the case of an unexpected price increase (Campbell 1995; Maxwell 1995, p. 22). As partitioned prices are comparatively unusual, consumers might speculate about the marketer’s motives for using this pricing strategy. Consumers in general expect concise and complete information about prices (Diller 2000, p. 185). Thus, a plausible explanation from the consumer point of view might be that the marketer tries to mask the total price and to mislead the consumer by offering partitioned prices, which serves to increase his profit. The consumers’ assumption of manipulative intent can be based on the observation that surcharges are often not made salient and thus are likely to be ignored (Lee/Han 2002, p. 28). Therefore, partitioned prices are believed to lead to a more negative perception of the marketer’s manipulative intent than total prices and finally to a negative product evaluation. This argument especially applies to percentage surcharges compared to monetary surcharges because many consumers might neither be able nor willing to spend the cognitive effort which would be necessary to calculate the correct total price (Morwitz/Greenleaf/Johnson 1998, p. 454). These considerations lead to

\[ H4: \text{ Price partitioning (compared to using a total price) leads to a more negative belief about the marketer’s manipulative intent.} \]

\[ H5: \text{ The effect of price partitioning on the belief about the marketer’s manipulative intent is stronger in the case of a percentage surcharge than in the case of a monetary surcharge.} \]

### 3.3. Effects on Perceived Complexity of the Price Structure

Another variable which might be relevant in the context of price partitioning is the clarity versus the complexity of the price structure (Xia/Monroe 2004, p. 71). Price information is more complex if the price is partitioned. The construct ‘complexity of the price structure’ reflects the fact that consumers may have difficulties in determining the correct total price if a price is partitioned. With a higher cognitive effort being necessary when prices are partitioned, consumers might feel that it is more difficult to determine the exact total price, given their intent to estimate that price. We argue that consumers may associate negative feelings with difficult tasks without any personal benefit and transfer these feelings to the product. We do not expect any different effects due to the surcharge amount on the perceived complexity of the price structure because consumers would only have to apply one type of mathematical operation to calculate the total price. However, if the partitioned price consists of a base price and a percentage (versus a monetary) surcharge, two mathematical operations would be necessary, which results in a comparatively high complexity of the price structure. We assume

\[ H6: \text{ Consumers perceive partitioned prices as more complex than total prices.} \]

\[ H7: \text{ The effect of price partitioning on the complexity of the price structure is stronger in the case of a percentage surcharge than in the case of a monetary surcharge.} \]

We assume that negative feelings due to high complexity of price structure can be transferred to consumers’ evaluation of the total price level, to their belief about the marketer’s manipulative intent as well as to the product. Furthermore, a high complexity of the price structure can be perceived as a higher required input relative to the output consisting in the product benefit. Thus, also from an equity-theory perspective (Adams 1965; Martins/Monroe 1994, p. 76), a comparatively high complexity of price structure should have a negative impact on product evaluation. This argument can be another explanation for the divergent findings of the previous studies on effects of price partitioning. Even if price partitioning (compared to using total prices) has a positive effect via the evaluation of the total price level, a negative effect through the complexity of the price structure on product evaluation might also exist.

### 3.4. Research Model

The theoretical considerations presented above are summarised in our research model which is shown in Figure 4. Note that the concept of product evaluation does not only refer to product quality but to the overall evaluation of an offer consisting of the product and the price to be paid.

The relations shown in Figure 4 will be examined in an empirical study which is presented in the following section.
4. Empirical Study

4.1. Test Stimuli

Price partitioning refers to combinations of products or services which cannot be bought separately although single prices are assigned to the components. Thus, we had to find components of products which cannot be bought separately and which are characterised by price partitioning in real life. We also had to determine how many components the products or services should contain. As other researchers have found in previous studies that overpartitioning, i.e. offering separate prices for too many product components, might be a disadvantage (e.g. Xia/Monroe 2004, p. 64), we decided to consider only products and services which consisted of two components. We selected five applications of price partitioning which were intended to be as realistic as possible. We chose test stimuli which were familiar to the respondents and which were regularly bought by them. The applied scenarios for the presentation of the total product prices were as follows:

- **Mobile phone contract.** “Imagine you intend to buy a new mobile phone with a two-year-contract. The monthly basic fee including a monthly minimum of required call units is € 20.”

- **Sauna entrance.** “Imagine you would like to use only the sauna area of a water park, but not the pools and other attractions of this water park. As the pool area is not separated from the sauna area you have to pay for both the pool and the sauna entrance. The total price for two hours is € 18.”

- **Concert ticket.** “Imagine you intend to visit a concert of your favourite band. Knowing that the concert tickets will be sold out quickly you decide to buy a ticket in advance. The advance ticket price including the surcharge is € 50.”

- **Hotel.** “Imagine you are planning a one-week stay at a three-star hotel in Spain. The bed and breakfast price is € 80 per night including the visitors’ tax which is obligatory.”

- **Oil change.** “Imagine your car needs an oil change. The garage close-by offers you an oil change service including high quality oil for € 150.”

The scenarios for the partitioned prices were the same scenarios but with single prices for the two components (see Table 3). With regard to the surcharge amount, the authors cited in Chapter 2 used surcharges in the range between 6 percent and 43 percent. Based on these procedures, we chose 5 and 40 percent as low and high sur-
Table 4: Mean values of product evaluation depending on price presentation and consumers’ cognitive effort

<table>
<thead>
<tr>
<th>Price presentation</th>
<th>Product evaluation</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>low cognitive effort</td>
<td>high cognitive effort</td>
<td>pooled sample</td>
</tr>
<tr>
<td>Low monetary surcharge</td>
<td>4.34</td>
<td>3.61</td>
<td>3.98</td>
</tr>
<tr>
<td>High monetary surcharge</td>
<td>3.82</td>
<td>3.84</td>
<td>3.83</td>
</tr>
<tr>
<td>Low percentage surcharge</td>
<td>4.39</td>
<td>3.89</td>
<td>4.14</td>
</tr>
<tr>
<td>High percentage surcharge</td>
<td>3.88</td>
<td>4.05</td>
<td>3.97</td>
</tr>
<tr>
<td>Total price</td>
<td>3.91</td>
<td>4.84</td>
<td>4.38</td>
</tr>
</tbody>
</table>

ANOVA F-value: 2.507 (p < .05) 11.010 (p < .001) 9.678 (p < .001)

Notes: Scale ranging from 1 = most negative evaluation to 7 = most positive evaluation. Means are based on arithmetically averaged six indicators (Cronbach’s Alpha = .971).

Table 5: Factor loadings of the reflective indicators (outer loadings)

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item</th>
<th>λ-coefficients</th>
<th>t-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation of the total price level</td>
<td>In general, this product is well-priced. (P1)</td>
<td>.939</td>
<td>53.661</td>
</tr>
<tr>
<td></td>
<td>This price is attractive. (P2)</td>
<td>.962</td>
<td>81.988</td>
</tr>
<tr>
<td></td>
<td>Compared with similar products’ prices, this price is well-priced. (P3)</td>
<td>.970</td>
<td>139.778</td>
</tr>
<tr>
<td>Perceived complexity of price structure</td>
<td>The presentation of the price is unclear. (C1)</td>
<td>.848</td>
<td>16.858</td>
</tr>
<tr>
<td></td>
<td>I cannot notice this price at a glance. (C2)</td>
<td>.765</td>
<td>10.203</td>
</tr>
<tr>
<td>Belief about marketer’s manipulative intent</td>
<td>My friends would judge this price as being an unfair price. (M1)</td>
<td>.891</td>
<td>26.894</td>
</tr>
<tr>
<td></td>
<td>This supplier demands an unfair price. (M2)</td>
<td>.928</td>
<td>64.666</td>
</tr>
<tr>
<td>Product evaluation</td>
<td>This offer appeals to me. (E1)</td>
<td>.941</td>
<td>73.941</td>
</tr>
<tr>
<td></td>
<td>The price-performance ratio is good. (E2)</td>
<td>.931</td>
<td>62.876</td>
</tr>
<tr>
<td></td>
<td>I would pay this price for this offer. (E3)</td>
<td>.923</td>
<td>43.940</td>
</tr>
<tr>
<td></td>
<td>I would like to buy this product. (E4)</td>
<td>.926</td>
<td>50.797</td>
</tr>
<tr>
<td></td>
<td>This offer is convincing. (E5)</td>
<td>.946</td>
<td>94.838</td>
</tr>
<tr>
<td></td>
<td>This offer is worth the money. (E6)</td>
<td>.946</td>
<td>89.619</td>
</tr>
</tbody>
</table>

4.2. Experimental Design and Measures

We used a 5x2 between-subjects design. The first manipulation was price presentation as shown in Table 3. The second manipulation consisted in influencing the cognitive resources the respondents could spend on processing price information. In the low cognitive resource condition, the interviewers involved the respondents in distracting conversations about brand names, frequency of consumption, product experiences, etc., while the respondents were reading the scenarios and filling in the questionnaire. In the high cognitive resource condition, the interviewers did not distract the respondents. Each participant was shown scenarios for all five products with the same price presentation (i.e., either a total price or one type of price partitioning) because we wanted to avoid the participants detecting the experimental setup.

The indicators applied in our study were intended to measure consumers’ evaluation of the total price level, of the complexity of the price structure, their belief about the marketer’s manipulative intent, and their product evaluation. The evaluation of the total price level was measured by three items following the suggestions of Bertini/Wathieu (2005) and Xia/Monroe (2004). Product evaluation was measured by six items following the recommendations of Lee/Han (2002) and Xia/Monroe (2004). As literature did not provide appropriate measures for the concepts ‘complexity of the price structure’ and ‘belief about the marketer’s manipulative intent’, we used our own scales (two items to measure each concept). As respondents can easily understand both concepts, directly asking them about ‘complexity of the price structure’ and ‘manipulative intent’ does not produce any validity problems. The items are summarised in Table 5. For each item we used a seven-point rating scale.

4.3. Procedure and Sample

The data were collected in 2004 in the centre of a mid-sized German city. 175 respondents (86 men, 89 women) participated in our study. The data collection was organised as follows: The participants were asked to read the first scenario, had to evaluate the first product and to indicate their evaluation of the total price level as well as to answer questions about their consumption, product experiences, etc., while the interviewers did not distract the respondents. Each participant was shown scenarios for all five products with the same price presentation (i.e., either a total price or one type of price partitioning) because we wanted to avoid the participants detecting the experimental setup.

We kept the total prices approximately the same across conditions. The chosen total prices, base prices and surcharges are shown in Table 3.

Notes: Scale ranging from 1 = most negative evaluation to 7 = most positive evaluation.

Means are based on arithmetically averaged six indicators (Cronbach’s Alpha = .971).
and their belief about the marketer’s manipulative intent. They then had to read the second scenario, to complete the corresponding scales and so on. At the end of the questionnaire, respondents were asked to provide information with regard to their age and gender. As we had ten groups resulting from the 5x2 design, each group consisted of 17 to 18 participants. The groups were structurally equal with regard to age ($F = 1.606, p > .10$) and gender ($\chi^2 = 3.887, p > .40$).

4.4. Overall Effect of Price Partitioning on Product Evaluation

In a first step we analyse the overall effect of price presentation on product evaluation. Table 4 shows that any investigated type of price partitioning ($M$ ranging from 3.83 to 4.14 in the pooled sample) has a negative impact on product evaluation compared to using total prices ($M = 4.38$). Results of a Scheffé test for the pooled sample indicate that using a low monetary surcharge, a high monetary surcharge, or a high percentage surcharge leads to a significantly worse product evaluation ($p < .05$).

Furthermore, the cognitive effort available to process information about products and prices proves to be a relevant moderating variable. Given that people are able to spend a high cognitive effort to process price information the strength of the negative effect of price partitioning compared to using total prices is comparatively high. Each type of price partitioning considered here proves to deteriorate product evaluation (result of the Scheffé test for the sub-sample ‘high cognitive effort’: $p < .02$). In the case of low cognitive resources available to process price information we have mixed results. If the surcharge is low, price partitioning is advantageous compared to charging a total price, whereas a price consisting of a base price and a comparatively high surcharge does not have an effect on product evaluation.

These results are at least a partial explanation for the different findings of the existing studies on effects of price partitioning presented above, provided that the participants spent different amounts of cognitive effort.

- In the case of a low cognitive effort spent on processing price information, consumers tend to ignore or underestimate low surcharges. Even if consumers are distracted, high surcharges seem to be worth being processed so that price partitioning does not have an influence on product evaluation compared to charging the total price.
- If consumers spend a high cognitive effort to deal with partitioned prices, price partitioning leads to a more negative product evaluation than does using total prices.

4.5. Effects of Price Partitioning through the Mediator Variables on Product Evaluation

We apply a partial least square (PLS) model to test the effects assumed in our hypotheses. The structural model is constructed as follows. Product evaluation is the target variable. The evaluation of the total price level, the perceived complexity of the price structure, and the belief about the marketer’s manipulative intent are integrated as mediator variables. Thus we have a model consisting of four endogenous variables which we measured by using reflective indicators. The exogenous model variable is price presentation. As we use a categorical variable representing different types of price presentation (five values) this variable has been transformed into four dummy variables. In order to avoid multi-collinearity of the price presentation dummy variables, the value ‘total price’ served as the reference category. As the consumers’ evaluation of the total price level and the product evaluation also might be influenced by the product categories, we integrated product category dummy variables to control for such level differences. However, none of these additional variables proved to have a significant effect on the .05 level.
A review of research in reputable journals shows that PLS models are preferred over LISREL if categorical data are used as exogenous variables (e.g., Fichman/Kemerer 1997; Kahai/Avolio/Sosik 1998). In recent literature authors often include dummy variables as formative indicators (e.g., Crilley/Sharp 2006, p. 13; Kahai/Avolio/Sosik 2004, p. 100; Li/Lam/Qian/Fang 2006, p. 266) by arguing that PLS does not require metric input data. Kahai/Cooper (1999) even state that PLS-analysis is insensitive to whether dummy variables are reflective or formative. The estimated model is shown in Figure 5. The outer weights of the dummy variables representing the type of price presentation were fixed to the value 1.

We used SmartPLS (Version 2.0 M2, Ringle/Wende/Will 2005) to estimate the model. First we present information about the quality of the measurement model. Note that for this purpose, we use the sample pooled across test stimuli and cognitive effort conditions resulting in N = 875 observations. The values in Table 5 show that the factor loadings (λ-coefficients) are sufficiently high and the highly significant t-values prove that the chosen items are appropriate for measuring the endogenous model variables (Bagozzi/Yi/Phillips 1991, p. 434).

In a second step we give an overview of the model fit, the reliability and the validity statistics (see Table 6). The R² values of the partial models are acceptable and the composite reliability and correlation values are sufficiently high (Bagozzi/Yi 1991). The average variance extracted exceeds squared correlations between the extracted P C M variables (squared correlations) extracted.

In hypothesis H1 we assumed that the sign of the effect of price partitioning versus using total prices on the evaluation of the total price level depends on the cognitive effort consumers spend on processing price information. H1 is valid if the path coefficients γLM→c, γLM→e, γLP→c, and γHP→c are positive in the low cognitive effort condition and if these coefficients are negative in the high cognitive effort condition.

### Table 6: Model fit, reliability and validity measures

<table>
<thead>
<tr>
<th>From</th>
<th>Low cognitive effort</th>
<th>High cognitive effort</th>
</tr>
</thead>
<tbody>
<tr>
<td>(P) Evaluation of the total price level</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(C) Perceived complexity of the price structure</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(M) Belief about the marketer’s manipulative intent</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(E) Product evaluation</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: a p < .01, b p < .05, c p < .10 (two-tailed tests).

### Table 7: PLS path coefficients

<table>
<thead>
<tr>
<th>R²</th>
<th>Composite reliability</th>
<th>Correlation</th>
<th>Average variance extracted</th>
<th>Correlations between endogenous variables (squared correlations)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.101</td>
<td>.970</td>
<td>.954</td>
<td>.916</td>
<td></td>
</tr>
<tr>
<td>.193</td>
<td>.786</td>
<td>.308</td>
<td>.650</td>
<td>- .347 (.120)</td>
</tr>
<tr>
<td>.631</td>
<td>.904</td>
<td>.657</td>
<td>.826</td>
<td>-.427 (.182) .714 (.510)</td>
</tr>
<tr>
<td>.634</td>
<td>.977</td>
<td>.971</td>
<td>.875</td>
<td>.736 (.542) -.493 (.243) -.562 (.316)</td>
</tr>
</tbody>
</table>

Note: Cronbach’s Alpha for P and E, bivariate correlations between the items for C and for M respectively.
high effort condition. In contrast to our hypothesis, the coefficients have positive signs in both sub-samples. At least the path coefficients in the high effort condition are numerically lower than in the low effort condition but, with one exception, they do not differ significantly (.157 < .277, t = -.853; .075 < .145, t = -.510; .131 < .397, t = -1.834, and .145 < .225, t = -1.198). Note that we used the recommendation of Chin (2004) to calculate the t-values. Overall we do not find support for H1.

In hypothesis H2 we expected that consumers who spend a little cognitive effort to process price information evaluate the total price level more favourably if a high surcharge compared to a low surcharge relative to the base price is used. Thus, H2 is valid if \( \gamma_{\text{HM}-\text{LP}} \) (.145) exceeds \( \gamma_{\text{LM}-\text{LP}} \) (.277) and if \( \gamma_{\text{LP}-\text{LP}} \) (.225) is higher than \( \gamma_{\text{LM}-\text{LP}} \) (.397). These findings contradict H2. Furthermore, the second part of H2 consisted in the assumption that consumers, who spend a high cognitive effort, evaluate the total price level more negatively if the surcharge is high (versus low). As none of the path coefficients has a negative sign, the condition to test H2 is not given. In sum, our data do not support H2.

Hypothesis H3 was also divided in two parts. For the low cognitive effort condition we expected a more positive evaluation of the total price level if a percentage versus a monetary surcharge is used. The results descriptively are in line with this assumption (\( \gamma_{\text{LP}-\text{LP}} = .397 > \gamma_{\text{LM}-\text{LP}} = .277 \) and \( \gamma_{\text{LP}-\text{LP}} = .225 > \gamma_{\text{LM}-\text{LP}} = .145 \)) although the differences are not significant (\( t = .770 \) and \( t = 9.898 \)). Additionally, in the high cognitive resource condition we did not expect an effect of a monetary versus a percentage surcharge. The data support this assumption. Neither the difference between \( \gamma_{\text{LP}-\text{LP}} \) and \( \gamma_{\text{LM}-\text{LP}} \) nor the difference between \( \gamma_{\text{LP}-\text{LP}} \) and \( \gamma_{\text{LM}-\text{LP}} \) is significant.

Our findings show that the perceived manipulative intent of the marketer is negatively related to product evaluation (low cognitive effort: \( \beta_{\text{HM}-\text{HM}} = .142 \), high cognitive effort: \( \beta_{\text{HM}-\text{HM}} = .264 \)). In hypothesis H4 we assumed that consumers regard price partitioning as a mean to manipulate them. Thus, we expect the path coefficients \( \gamma_{\text{LM}-\text{LM}} \), \( \gamma_{\text{HM}-\text{HM}} \), \( \gamma_{\text{LP}-\text{LP}} \) and \( \gamma_{\text{LP}-\text{LP}} \) to have positive signs. As only the coefficients \( \gamma_{\text{LM}-\text{LM}} \) and \( \gamma_{\text{LP}-\text{LP}} \) are significant in both sub-samples, this hypothesis is only partly supported. If consumers have to deal with percentage surcharges, they worry about being manipulated. Thus, the data provide support for hypothesis H5, according to which the effect of price partitioning on the perception of the marketer’s manipulative intent is stronger if percentage surcharges instead of monetary surcharges are used.

Compared to other studies on price partitioning effects, we additionally included the concept of ‘perceived complexity of the price structure’ as a mediator variable in our analyses which proves to have a direct effect on product evaluation (low cognitive effort: \( \beta_{\text{LM}-\text{LM}} = -.118 \), high cognitive effort: \( \beta_{\text{LM}-\text{LM}} = -.124, p < .10 \) as well as indirect effects via ‘price level evaluation’ (\( \beta_{\text{LP}-\text{LP}} = -.440 \) and \( -.456, p < .01 \)) and the belief about the marketer’s manipulative intent (\( \beta_{\text{LP}-\text{LP}} = .597 \) and \( .633, p < .01 \)). In H6 we postulated that consumers evaluate partitioned prices as being more complex than total prices. In the low cognitive effort condition, consumers are supposed to accept that they are not able to calculate the exact total price if the price is partitioned, but they might feel the difficulties which would be associated with price processing. Our investigation shows that partitioned prices are perceived as being more complex than total prices (with the exception of \( \gamma_{\text{LP}-\text{LP}} \)). For the high cognitive effort condition we assume that consumers actually try to calculate the total price if the price is partitioned, thus recognising the complexity of the price structure. All the path coefficients \( \gamma_{\text{LM}-\text{LM}} \), \( \gamma_{\text{HM}-\text{HM}} \), \( \gamma_{\text{LP}-\text{LP}} \) and \( \gamma_{\text{LP}-\text{LP}} \) are significantly positive, thus providing support for this hypothesis. Overall, H6 is supported.

Finally, we prove the assumption that the effect of price partitioning on perceived complexity of the price structure is stronger if percentage surcharges versus monetary surcharges are used. Thus we expect \( \gamma_{\text{LP}-\text{LP}} > \gamma_{\text{LM}-\text{LM}} \) and \( \gamma_{\text{LP}-\text{LP}} > \gamma_{\text{LM}-\text{LM}} \). In the case of a low cognitive effort the differences are not significant (low surcharge: \( t = -.865 \), high surcharge: \( t = 1.159 \)). In the case of a high cognitive effort the postulated relation can be supported (.405 > .242, \( t = 2.410 \) and .505 > .210, \( t = 2.718 \)). Thus, the data provide only partial support for hypothesis H7.

4.6. Interpretation

The main conclusion of our investigation is that it is not possible to generally judge price partitioning as being advantageous or disadvantageous. This finding is in line with the observation that the results of previous studies on price partitioning effects are contradictory.

With our study presented above we contribute to the existing body of research by including the cognitive effort consumers spend on processing partitioned prices. This concept is relevant because in the low cognitive effort condition, price partitioning versus using total prices has positive effects on product evaluation (at least in the case of comparatively low surcharges), whereas these effects are negative in the high cognitive effort condition. We additionally have shown that not only the evaluation of the total price level, but also the perceived complexity of the price structure and the belief about the marketer’s manipulative intent, are important mediator variables between price presentation and product evaluation. In accordance with the results of Lee/Han (2002) and Morwitz/Greenleaf/Johnson (1998) we also found that consumers tend to perceive partitioned prices as being lower than total prices. Our new approach suggests that this positive effect can be compensated or even overcompensated by the negative effects of the two additional mediator variables which has been proved by the data of our study.

In more detail we found that price partitioning compared to using total prices is beneficial if low surcharges are used and if consumers spend a little cognitive effort on
price processing. Note that we interpreted a 5 percent surcharge as being low and a 40 percent surcharge as being high.

On the basis of theoretical approaches which have been mentioned in the literature on price partitioning, we derived several hypotheses aiming at forecasting effects of different types of price presentation.

- Two of our hypotheses are supported. If percentage surcharges are used, consumers feel that they are being manipulated (H5). All types of surcharges increase perceived complexity of the price structure (H6). These effects have negative consequences with regard to product evaluation.

- A further hypothesis (H7) was at least partly supported. Our data show that only in the case of a high cognitive effort partitioned prices with percentage surcharges are perceived as being more complex than partitioned prices with monetary surcharges. The fact that H7 is only valid in the high cognitive effort condition can be explained by the consideration that, in this case, consumers do not only notice the difficulty of calculating the exact total price but they also experience this difficulty.

- The hypotheses H1 to H4 were not statistically supported. H1 and H2 were based on the assumption that in the case of a high cognitive effort, consumers who process partitioned prices evaluate the level of the total price negatively (i.e., higher) compared to consumers who see total prices. Considering averaging processes and the value function of the prospect theory lead to deriving this assumption. However, we admitted based our argument on additional premises (e.g., that the reference point for the evaluation of product expenditures is zero) which might not be valid. A further possible explanation for the fact that we did not find negative signs of the path coefficients from price presentation (price partitioning versus using total prices) to the total price level evaluation might be that our manipulation did not sufficiently motivate the respondents in the 'high cognitive effort' sub-sample to seriously process price information. Note that the path coefficients at least decrease with an increasing cognitive effort.

- Hypothesis H3 was at least descriptively supported. Consumers who spend little effort on price information processing evaluate the price level more positively if percentage surcharges instead of monetary surcharges are used.

- Finally, in two out of eight conditions we were not able to find support for H4. In this hypothesis we postulated that consumers generally feel that they are being manipulated by price partitioning. In the case of low or high monetary surcharges in the low cognitive effort condition, the consumers did not experience more manipulation than the consumers who had seen the total price. This finding might be due to these consumers’ false assumption that it might be easy to calculate the exact total price.

5. Implications for Marketers and for Further Research

Based on our findings, we recommend the use of price partitioning only under the condition that consumers spend little cognitive effort on processing the price information and that the surcharge relative to the base price is low. If consumers should spend a high cognitive effort on processing price information, marketers should instead use total prices. This recommendation leads to the question of what 'little effort' and 'low surcharges' mean. It is common sense that for example consumers who receive information via mass media do not spend much cognitive effort on processing any information, including price information. As an example for a low surcharge we used 5 percent in relation to the base price. As Chakravarti et al. (2002) and Morwitz/Greenleaf/Johnson (1998) also found a positive overall effect of price partitioning by applying up to 20 percent surcharges, it seems to be possible to also benefit from using slightly higher surcharges.

Admittedly, our study has several limitations which can serve as starting points for further academic research. First, we only considered low- and medium-priced products. For example, our most expensive application was an oil change (up to € 150). It would also be interesting to conduct more research on high-priced products (Xia/Monroe 2004, p. 72). We expect that with an increasing price level, consumers tend to spend more cognitive effort on processing price information because the financial risk of purchasing the wrong product increases. Second, we suggest inducing a higher motivation in respondents to process partitioned prices than we did in our ‘high cognitive effort’ sub-sample because this procedure might actually result in negative evaluations of the total price level if prices are partitioned. Third, it might also be interesting to analyse if the effects of price partitioning depend on the implied motives the consumers ascribe to price partitioning. Similarly to Homburg/Koschate (2005), who investigated if consumer reaction to price increases depends on the motive the marketer is assumed to have (either due to cost increase or due to profit maximisation), consumers might assume different motives for price partitioning. Consumers might not only believe that the marketer is trying to mislead them, but they also might think that the marketer is attempting to increase price transparency by informing them about the relative value of the product components. Thus, another treatment variable could consist in presenting additional arguments for why price partitioning is used. Fourth, further studies might aim at identifying product components which consumers do not associate with any manipulative intent if the price is partitioned (e.g., flight ticket: ticket price + tax).
References


