Chapter 9

Summary and Main Findings

9.1 Summary

This dissertation proposed and tested a new method to estimate willingness-to-pay (WTP).

For practical applications the estimation of willingness-to-pay belongs to the field of strategic marketing planning. Recent developments in marketing show that pricing of products is driven by a value based approach. In a value based approache the price of a product is based on the perceived valuation of the target customers. The research in the field of pricing is of ample importance. The reason is that price is the only element of the marketing mix that generates income. All other elements, such as advertising and promotion, product development, selling effort, distribution, packaging and so forth, involve expenditures (cf. Nagle and Holden (2002, chapter 1) and Monroe (2003, chapter 1)). In order to set a good price a marketer has to anticipate the market's price response behavior. That is, the marketer needs valid estimations of the consumers' willingness-to-pay.

To describe willingness-to-pay we discussed different concepts, by which consumers' reactions to price are determined. There exist two concepts which are sometimes used synonymously in marketing literature. These are the *maximum price* and the *reservation price*. However, both concepts subsume under the more general term willingness-to-pay.

The underlying cognitive processes for the formation of the maximum price and the reservation price are different. The maximum price a consumer has for some product is formed based on some reference product, which is perceived as the best alternative, plus a differentiation value, which reflects the additional valuation for the difference between the product and the next best alternative. In contrast, the reservation price does not depend on an alternative offering. It is simply the price at which the consumer is indifferent between consuming the product or not consuming the product at all.

We have argued that for the two valuation concepts always the lower one determines the purchase decision of a consumer. Therefore, when a consumer's willingness-to-pay is estimated, the researcher never knows whether the maximum price or the reservation price determines the estimation.

However, this is not so critical after all. We have shown that the valuation mechanisms

maximum price and reservation price for different product alternatives have a linear relationship with the products' utility. Furthermore, the two relationships are also parallel. Because of the linearity and the parallelism a marketer need not know, which concept determines willingness-to-pay, as long as a customer's choice behavior can correctly be predicted. Therefore, the more general term willingness-to-pay under which the two concepts maximum price and reservation price subsume can be used.

With the concepts maximum price and reservation price discussed and the subsuming term willingness-to-pay established, different measurement techniques that are applied in marketing applications were presented. Out of the variety of instruments used in marketing, due to monetary or time constraints in the practical application surveying techniques are the preferred choice.

The estimation procedure, that was proposed in this thesis, is a surveying instrument which is based on conjoint analysis. Because of the connection between our new procedure and conjoint analysis, the latter is discussed in detail.

Conjoint analysis has a long tradition in pricing studies and especially for the estimation of willingness-to-pay. A selection of publications was presented to illustrate the developments in this research area until today. The general approach with conjoint analysis in pricing studies is to incorporate price as an attribute and estimate part-worth utilities for different price levels. Based on these estimations a linear function is fitted that maps conjoint utilities on a price scale (cf. Green and Srinivasan (1978), Pinell (1994), and Orme (2001, 2002)).

Several problems can be identified that arise in traditional pricing studies by conjoint analysis:

1. *Theoretical Problems*: By treating price as an attribute in a conjoint study part-worth utilities are estimated for the presented price levels. By economic definition price does not have a utility, rather it reflects the foregone alternative consumption (with the associated utility) if a product is purchased.

2. *Practical Problems*: The inclusion of price leads to several unwanted effects such as the *price effect*, the *range effect*, and the *number of levels effect*. These effects occur when the number of levels of an attribute is changed in a conjoint study. However, price does not have a natural number of levels. Therefore, the attribute price can often not be configured as would be best for the objective of the pricing study.

3. *Estimation Problems*: Traditional conjoint analysis does not incorporate a decision rule. This makes the estimation of choice behavior difficult. To estimate willingness-to-pay choice information is needed. This information is usually added to the data by assuming or explicitly asking the respondents for a status quo product, that the respondent would actually purchase. In view of this status quo product all other products of the study are priced. However, a priori assuming a status quo product can be a great source of error. Asking each respondent for only one status quo product might not bear sufficient information to estimate willingness-to-pay for all possible product realizations.

Our new estimation procedure overcomes these problems by not including price in the conjoint analysis, but rather estimating the linear relationship between conjoint utilities