

THE EFFECT OF REFERENCE PRICES ON CONSUMER WILLINGNESS-TO-PAY: AN
INVESTIGATION OF THE ONLINE NAME-YOUR-OWN-PRICE STRATEGY

by

YI CAI

(Under the Direction of Brenda Cude)

ABSTRACT

The purpose of this research was to provide a better understanding of consumers' WTP and emotions when using a NYOP method when reference prices were and were not available. Specifically, this study examined 1) whether the availability of reference prices increases consumers' comfort with using the NYOP method and their confidence with their WTP; 2) whether consumers feel more regret about a negative outcome when reference prices are available; and 3) how reference prices affect consumers' WTP and whether different reference prices play different influential roles in the online purchase environment. Five specific research questions and five hypotheses were tested in three experiments. The results indicated that the reference prices significantly affected subjects' WTP. Also, subjects' comfort with using the NYOP method and regret about a negative outcome were significantly correlated with the availability of reference prices. The current study has implications for consumers as well as for marketers in that reference prices serve as an informational tool to help consumers to transfer their preferences or value elicitation into monetary terms. A model regarding consumers' regret about a negative outcome also was proposed for future research.

INDEX WORDS: Reference Price, WTP, Name-Your-Own-Price, Mental Accounting Theory, Decision Justification Theory, Regret, Comfort

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by

YI CAI

B.EC., NanKai University, China, 1994

M.S., The University of Georgia, 2002

A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial

Fulfillment of the Requirements for the Degree

DOCTOR OF PHILOSOPHY

ATHENS, GEORGIA

2005

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by

YI CAI

Major Professor: Brenda Cude

Committee: Adam Goodie
Julia Marlowe
Jaxk Reeves
Richard Watson

Electronic Version Approved:

Maureen Grasso
Dean of the Graduate School
The University of Georgia
December 2005

DEDICATION

I dedicate this dissertation to my dear wife, Yali, for your constant support and encouragement. You are the reason for my staying here and finishing the degree.

ACKNOWLEDGEMENTS

I give SPECIAL thanks to Dr. Brenda Cude who has guided me to complete this exciting journey of learning with countless warm-hearted support. She is one of the smartest and nicest persons I've ever met. I could not finish this study without her advice and help.

I also would like to deeply thank my committee for their support and encouragement. Dr. Julia Marlowe, Dr. Roger Swagler, Dr. Richard Watson, Dr. Adam Goodie, and Dr. Jaxk Reeves provided me expert feedback and important input. Especially, I appreciate Dr. Watson's suggestions, which were very constructive and supportive.

I am immensely blessed with many wonderful people. I would like to show my sincere appreciation to people in the Department of Housing and Consumer Economics, especially Ms. Susan Brooks, Ms. Nikki Williams, and Ms. Linda Tony, who have offered me countless help through those years.

Finally, I must thank my wife Yali for helping me complete this study and find the goal for my future.

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CHAPTER 1

INTRODUCTION

The purpose of this research was to provide a better understanding of consumers' WTP and emotions when using a NYOP method when reference prices were and were not available. Specifically, this study examined 1) whether the availability of reference prices increases consumers' comfort with using the NYOP method and their confidence with their WTP; 2) whether consumers feel more regret about a negative outcome when reference prices are available; and 3) how reference prices affect consumers' WTP and whether different reference prices play different influential roles in the online purchase environment.

The past three decades have witnessed a rapid increase in the amount of research on behavioral response to price information, focusing on understanding how consumers attend to, process, and use price information in their judgments and choices (Lichtenstein, Bloch, and Black, 1988; Monroe & Lee, 1999). Most of this research has been conducted in a stimulus-response framework, which investigates the actual prices that consumers encounter as stimuli activating the consumer perception and behavioral process. Consumers encode and evaluate the given market price as well as other non-price information when making purchase decisions. The stimulus-response framework has become a norm for marketing research on consumer purchase behavior related to price. The exceptions to this research paradigm include the consumers' willingness-to-pay (WTP) studies which examine the maximum price a buyer is willing to pay for a given quantity or quality of a good. In WTP studies, instead of responding to price as the given stimulus, consumers have more flexible (at least theoretically) choices in terms of value elicitation.

Estimating consumers' WTP is an important endeavor for both marketers and economists involved in marketing and policy formation. The best method to determine the value of goods and services is to observe what consumers are willing to pay for them in openly traded marketplaces because that is the way goods and services are sold. However, employment of WTP techniques has been limited to valuing non-traded public goods or assessing consumers' preferences for new-entry products. Researchers have argued that the limitation of WTP techniques lies in the methodological controversies, such as the framing of the questions and the incentive compatibility of the stimuli. For example, researchers have argued that questions regarding hypothetical purchase behaviors and an arbitrary purchase environment in a laboratory do not provide incentives for consumers to reveal their true value elicitation (Frew, Whynes, and Wolstenholme, 2003). In addition, the WTP techniques are difficult to apply in the real marketplace (Wertenbroch & Skiera, 2002).

With the development of the Internet and the rapid growth of online marketplaces, consumers have more choices not only in terms of product assortment but also in terms of product and service pricing. One such pricing strategy, popularized by the industry leader Priceline.com, asks consumers to name their own prices for various goods or services (e.g., airline tickets, hotels, rental cars). The participating vendors then can reject or accept the prices proposed by consumers, depending on the desired margin. Under this system, as in an auction, buyers rather than sellers suggest a price for a product with a transaction occurring only if a seller is willing to accept the quoted price.

With its unique pricing strategy, Priceline.com itself is a significant entity to study, having generated nearly \$3 billion in total revenue in its first four years since its inception in April 1998 (Williams, 2002). Also, the data generated by this mechanism are interesting from a

consumer research perspective because they reveal information about consumers' WTP in a real purchase environment. The name-your-own-price (NYOP) mechanism collects consumers' bids in a way that shows similarities to WTP techniques such as Vickrey auctions (Vickrey, 1961) and the method proposed by Becker, DeGroot, and Marschak (1964). Wertenbroch and Skiera (2002) demonstrated that the incentive compatibility characteristic of these methods allows them to obtain a higher validity for measurement of WTP than contingent valuation methods. In addition, such open-ended individual bids could make a more exact statement about the individual's WTP than revealed preferences (Wertenbroch & Skiera, 2002).

Pricing research emphasizes that consumers compare an item's sale price to a reference point or standard when arriving at their own valuation of the item (Monroe, 1977). The role of reference prices in consumer behavior has been the subject of several researchers' attention (Kalyanaram & Winer, 1995; Monroe & Lee, 1999). According to adaptation level theory (Helson, 1964), judgments depend on a comparison of the target with an adaptation level, which is a function of recent related experiences. With regard to consumer behavior, Kalyanaram and Winer (1995) have proposed that consumers' price perceptions depend on a comparison of market prices with an internal reference price, which reflects an adaptation level of past prices. Empirical findings in the literature support the notion that consumers behave as if they had an internal reference price to which they refer in their decision process (Kalyanaram & Winer, 1995). Other researchers (e.g., Blair & Landon, 1981) have proposed that price perceptions also may depend on a comparison of market prices with an accessible external price range such as prices in retail advertisements. Researchers have investigated other concepts of reference price, such as last paid price (Monroe, 1971), fair price (Thaler, 1985), expected future price (Jacobson

& Obermiller, 1990), and average price of similar products (Gabor, 1977), and found that reference prices significantly influence consumers' price perceptions and value elicitation.

Other psychological theories strongly support the reference price concept as well. Kahneman and Tversky's Prospect Theory (1979) has been used to justify reference price effects. The Prospect Theory is a behavioral approach combining economics and psychology. The prominent feature of the theory is that it replaces the utility function used in the traditional economics theory with a value function, which is the source of consumer satisfaction. Some reference point naturally is assumed in the value function, which is defined over gains and losses domains. The Prospect Theory is an important theory not only for the significance of reference prices but also for the general phenomena of asymmetrical demand effects for gains (e.g., observed prices below the reference price) and losses (e.g., observed prices above the reference price). Thaler (1985) developed a concept of mental accounting based on the Prospect Theory. The researcher introduced the concept of transaction utility into the value function by explicitly adding the reference price into a value elicitation model. The empirical evidence supported the significance of the transaction utility in consumers' WTP (Thaler, 1985).

This study aims to investigate consumers' value elicitation through an online NYOP channel and focuses on the impact of reference prices on consumers' WTP. From an economics standpoint, the extreme flexibility of the NYOP scenario offers virtually unlimited degrees of freedom for consumers to state their WTP. The perfect price discrimination generated from this strategy could improve social efficiency (Daripa & Kapur, 2001). However, to achieve greater efficiency, consumers must have established preferences and be able to easily transfer their preferences into monetary terms (Varian, 1999). It could be argued that greater flexibility and the lack of price stimulus also are likely to be associated with a greater degree of uncertainty and

cognitive effort among consumers. Therefore, employment of the NYOP strategy may not achieve the desired gains in efficiency if consumers cannot precisely articulate their predetermined value elicitation. Thus, researchers should consider the impact of various contextual variables on consumer decisions. This argument also is supported by the view of consumers as contingent decision makers who, rather than having predetermined preferences, form their preferences and make decisions in the context of decision tasks (Bettman, Luce, and Payne, 1998). Researchers have shown that reference prices, as an important contextual variable, play a critical role in consumers' decisions related to price perceptions and willingness-to-pay (Kalyanaram & Winer, 1995; Lowengart, 2002; Thaler, 1985).

A second objective of the current study was to examine consumers' emotions related to their decisions when they use the NYOP method. Decision research only recently has started to take seriously the role of emotions in choices and decisions (Connolly & Zeelenberg, 2002). Most people give decisions careful thought: What are the options? How much to pay? How likely are hoped-for outcomes? In addition to economic and cognitive considerations, most decisions also involve strong emotional factors. At the time of the decision, the person has feelings about the decision process itself as well as the possible outcomes of the decision.

The emotion that has received the most research attention from decision theorists is regret (Loomes & Sugden, 1982; Simonson, 1992). People often can readily recall or imagine situations in which a decision led to painful regret. Researchers have argued that outcome feedback is the decision maker's primary source of information for evaluating the quality of the decision. Outcomes of decisions also can generate a variety of affective responses including a feeling of regret (Einhorn, 1980; Hoch & Loewenstein, 1989). In addition, at the time of the decision, a person has feelings about the decision process itself (e.g., excitement about planning a vacation).

Little research has dealt with decision makers' feelings about the decision process. The current study aimed to examine consumers' feelings about the NYOP method from two perspectives: their level of comfort with using the method and their feeling of regret when the outcome is negative. The impact of the availability of different reference prices on consumers' feelings also was investigated.

Although a common topic for the popular press, scholars have given the NYOP channel only limited attention (Chernev, 2003; Spann, Skiera, & Schafers, 2004). Previous papers have focused on consumer behavior issues such as consumers' attitudes toward naming a price and price selection (Chernev, 2003), calculating the transaction costs of bidding (Hann & Terwiesch, 2003), and examining whether consumers' bids follow rational patterns (Spann et al., 2004). The study reported here investigated the impact of reference prices on consumers' emotions and their WTP elicitation when they use a NYOP method. Specifically, it aimed to answer the following research questions: 1) Does the availability of reference prices increase consumers' comfort with using the NYOP method? 2) Are consumers more confident with their WTP when reference prices are available than when reference prices are not available? Furthermore, are consumers more confident if both internal and external reference prices are available compared with when only one of them is available? 3) Facing a negative outcome, do consumers feel more regret when reference prices are available than when they are not available? 4) In the online purchase environment, does the external reference price play a more important role in consumer decisions than the internal reference price? And 5) Does manipulation of reference prices, such as changing the magnitude of reference prices, affect consumers' WTP?

CHAPTER 2

LITERATURE REVIEW

Knowledge of consumers' WTP is crucial in estimating demand and designing optimal pricing strategies. Existing market and consumer research WTP elicitation techniques differ in whether they employ an open-ended or closed-ended format and whether they simulate actual point-of-purchase contexts. The following review compares different WTP elicitation techniques and discusses one method which enables researchers to employ an open-ended format of WTP elicitation in a relevant point-of-purchase context. Next, by comparing the WTP elicitation technique with the NYOP strategy, the advantage of the NYOP strategy as a method to reveal consumers' WTP in a real purchase environment is discussed. Then, emotion in decision making is discussed, focusing on regret and a theoretical framework which links availability of reference information to consumers' feelings of regret. To address the importance of a contextual market variable, i.e., reference prices, in understanding consumer behavior in marketplaces, a theoretical framework as well as empirical research on reference prices then are reviewed and the application of reference prices in consumers' WTP elicitation is discussed.

Consumers' Willingness to Pay

Researchers have estimated consumers' WTP using either actual market transactions (revealed preferences, e.g., from scanner data) or survey data (stated preferences) (Lee & Hatcher, 2001; Wertenbroch & Skiera, 2002). The key advantage of survey data is that they can be elicited in the evaluation of non-traded public goods or in testing new products. The disadvantage of survey data is their limited external validity: they retain limited power in

examining consumers' choices and decisions at the point of purchase and provide little incentive to consumers to reveal truthfully their WTP. In contrast, scanner data have higher external validity because actual purchases are observed under realistic market conditions. However, investigation of scanner data still is conducted within the stimulus-response framework; that is, consumers make purchase decisions facing various posted prices. Posted prices in real markets typically vary only within limited ranges (Ben-Akiva, Bradley, Morikawa, Benjamin, Novak, Thomas, Oppewal, & Rao, 1994); therefore, transaction data reveal only that a buyer's WTP is at least as high as the highest posted price and that a non-buyer's WTP is lower than the lowest posted price. When scanner data are used, consumers' true WTP may remain unknown. Consumer researchers need methods that both are applicable at the point of purchase and truthfully reveal consumers' WTP.

Wertenbroch and Skiera (2002) presented an empirical comparison of several research methods for eliciting WTP at the point of purchase. In particular, they tested the applicability of Becker, DeGroot, and Marschak's (1964) (hereafter BDM) procedure to measure consumers' WTP in market research. Wertenbroch and Skiera (2002) argued that the traditionally used methods such as scanner data and survey data (e.g., conjoint analysis or contingent valuation analysis) have their drawbacks in measuring consumers' WTP. Scanner data do not provide an incentive-compatible estimation of WTP while survey data are not applicable at the point of purchase. Lee and Hatcher (2001) also argued that the use of scanner data would lead to biased estimates of the real WTP. They also acknowledged several other weaknesses of using survey data to measure WTP, including a potentially large divergence between consumers' statements and actual behavior.

Although there is no gold standard for measuring WTP because consumers' true WTP is unobservable, it is imperative that a measurement method be theoretically incentive compatible, realistic, transparent to consumers, and operationally efficient. Hoffman, Menkhaus, Chakravarti, Field, and Whipple (1993) suggested that the experimental Vickrey (1961) auction is a good example of such a method. The manipulation of a wide price range enables researchers to utilize a higher variability of prices than when using scanner data to examine consumers' response. In addition, unlike methods based on stated preference data, Vickrey auctions provide bidders with an incentive to reveal their WTP truthfully, because they must buy the good in a real transaction if their bid wins the auction. Researchers have found that the experimental auction methods in general provide more accurate WTP measures than the contingent valuation method (Lee & Hatcher, 2001).

Despite the theoretical advantages, Wertenbroch and Skiera (2002) argued that experimental auctions exhibit practical and empirical limitations. First, auctions require consumers to meet in a research facility; therefore, the set-up costs can be substantial. Second, auction processes do not simulate consumer point-of-purchase decisions and choices in normal retail settings. Lee and Hatcher (2001) also argued that the laboratory-setting problem in the auction method may dominate the real-incentive mechanism advantage. In addition, the researchers pointed out that experimental auctions bear a disadvantage of geographical or regional restrictions on samples and, therefore, a nonrepresentative sample problem.

Another stream of arguments related to WTP focuses on the methodological controversy, especially the format of the WTP elicitation. Basically, researchers have used two broad formats of WTP elicitation—open-ended and closed-ended. In the open-ended format, each subject is invited to choose his or her own WTP valuation, unbounded and unprompted. The closed-ended

format includes the payment scale selection approach, contingent evaluation, and conjoint analysis methods, in which each subject is required to make an accept/reject choice at predetermined values. Another closed-ended format is the bidding and bargaining format in which the investigator suggests WTP values that the subject accepts or rejects. Each of the different elicitation formats possesses advantages and potential weaknesses (Frew et al., 2003; Lee & Hatcher, 2001). Researchers have argued that by explicitly indicating a range and/or starting values, the closed-ended format provides subjects with very strong cues (Frew et al., 2003). Although the value cues might make the valuation task more comprehensible to the subject, a high (low) range endpoint or bid level, for example, might lead a subject to infer that these high (low) levels are actually the most appropriate valuation, and responses accordingly may be biased upward (downward). This is known in the literature as the anchor effect; it has been studied widely and its influence on consumer decisions has gained empirical support (O'Connor, Johannesson, & Johansson, 1999).

The argument about the weaknesses of the open-ended WTP elicitation format, on the other hand, rests in the intrinsic difficulty for subjects to elicit the value of their WTP (Frew et al., 2003). By deliberately failing to provide subjects with any cues as to plausible values, the valuation question in the open-ended format is held to be cognitively difficult to answer. However, the difficulty may be directly related to the fact that most of the WTP studies used non-traded public goods or new-entry products. The nature of those items is likely to make it difficult for subjects to name a plausible value without referring to cues provided by investigators. In contrast, for items such as ordinary consumer goods, the valuation task may be cognitively easier because the consumer likely can recall reference values from memory. The other weakness of the open-ended format is that it is unrealistic and may generate prices unlike

those in the marketplace. It also differs from the stimulus-response format, which is the norm for pricing strategies used in the marketplace.

To address simultaneously some of the theoretical, empirical, and practical limitations of conventional WTP measurement methods, Wertenbroch and Skiera (2002) applied a BDM procedure to the elicitation of WTP at the point of purchase of ordinary consumer goods (Figure 1). This method can be used in a field study where real purchases occur. The procedure prevents consumers from either understating or overstating their true WTP. Understating the true WTP could reduce the chance of buying at a gain and overstating it could increase the chance of buying at a loss. The BDM procedure also permits the elicitation of an incentive-compatible WTP without physically convening consumers in groups in a laboratory. In addition, respondents do not compete with each other for the same product. Thus, the decision of how much to bid is only a question of the bidder's true valuation of the good and is not influenced by the desire to outbid others on a limited stock. Finally, the respondents pay out-of-pocket in real purchase locations such as malls or stores, subject to the intended purchase conditions and realistic buying motives.

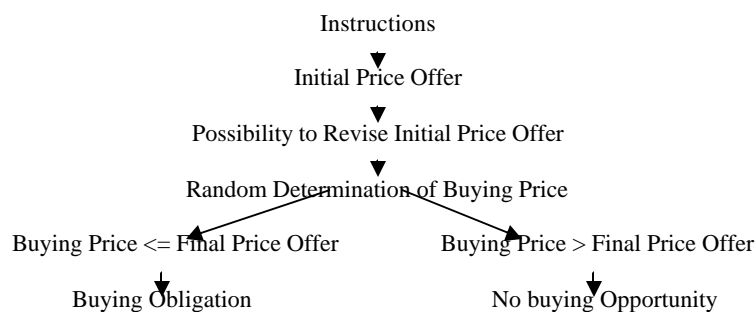


Figure 1. Flow chart of BDM procedure.

Compared with existing methods, the BDM procedure has both strengths and weaknesses. The WTP can be elicited at the point of purchase, whereas in traditional methods consumers face an artificial format that is not representative of the actual purchase context and may trigger unrepresentative value elicitation. However, because consumers must choose the offer price at the point of the purchase and pay for the item immediately after the criterion is met, monetary constraints may bias their WTP downward for higher-priced products. Also, consumers may need more time to think about their offers as well as external information about price and other product attributes.

How consumers incorporate internal and external references to elicit their WTP is a question that remains unanswered. Although Wertenbroch and Skiera (2002) emphasized the importance of the context-dependent nature of the BDM procedure, that is, the specific transaction context at the point of purchase itself may induce different levels of value elicitation and WTP, the researchers did not test this property. Nor did they offer insights regarding how the context variables may affect consumers' WTP elicitation. Finally, the BDM procedure ultimately is still a theoretical research method; the random price-selection manipulation is hardly applicable in the real marketplace.

Online Name-Your-Own-Price (NYOP) Mechanism

On the surface, the features of the BDM procedure resemble those of the online NYOP method. For example, the NYOP method also requires consumers to make decisions at the point of purchase. The products are not scarce; therefore, consumers are not required to compete with each other for the same product. Also, both methods share the open-ended format for price elicitation (see Figure 2 for the NYOP procedure). In addition, the items used in both methods are assumed to be ordinary consumer goods or services.

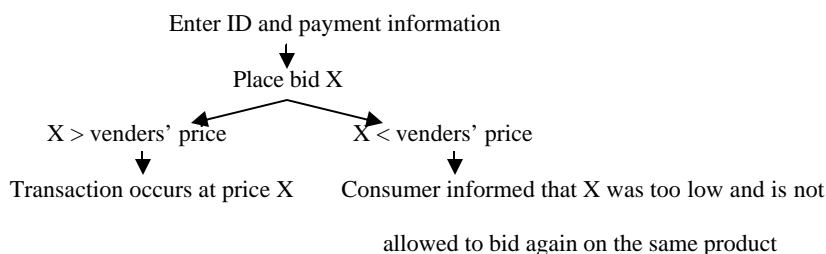


Figure 2. Name-your-own-price procedure.

The difference between the two methods lies in the feedback consumers receive from their bids. In the BDM procedure, researchers use randomly selected (respondents are aware of the randomness) prices from a predetermined price range to give consumers feedback. In contrast, in the NYOP strategy, vendors use their own prices (which usually depend on their marginal cost) to give consumers feedback. Although the vendors' prices are unknown to consumers, consumers can use the feedback to make at least some inferences about real market prices by referring to certain internal and/or external reference information. Also, compared to the BDM procedure, the NYOP procedure offers consumers a more flexible environment in which to draw on internal and external reference information. In this sense, the NYOP strategy is more realistic than the BDM procedure with regard to market pricing strategy.

Current literature dealing with the investigation of consumer bidding behavior in NYOP mechanisms is limited to a few papers (Chernev, 2003; Fay, 2004; Hann & Terwiesch, 2003; Spann et al., 2004). These papers differ with respect to their research goals and methods. Most of the studies focused on a comparison between a single-bid and a repeat-bid model through a research site in Germany (Fay, 2004; Hann & Terwiesch, 2003; Spann et al., 2004).

Hann and Terwiesch (2003) empirically analyzed the NYOP mechanism in a repeated bidding model. They developed an economic model to explain consumers' bidding behaviors and used the model to measure the frictional costs of buying products online. (Frictional costs are a part of consumer search cost, including the cost of time and effort to interact with a website

and the cost of interacting with various user interfaces.) However, they only considered a repeat-bid model and did not compare this model with a single-bid model, which is the norm for this pricing mechanism in the marketplace. Moreover, they did not estimate the individual consumer's WTP, which is important from a consumer research point of view.

Spann et al. (2004) developed and empirically tested a model to estimate simultaneously consumers' WTP and their frictional costs. Further, the researchers analytically and empirically compared bidding behavior and profit implications of the single-bid model to those of the repeat-bid model. In addition, the researchers derived closed-form solutions and an algorithm for the determination of optimal bids. However, the solutions were based on an assumption that the sellers' threshold price is constant, which may or may not be valid in the real marketplace.

Fay (2004) developed an analytical model for a NYOP seller's profit under varying restrictions for the possible number of bids consumers can submit. The researcher compared the single-bid model with a model where experienced consumers can submit multiple bids at Priceline by using 'tricks' such as providing multiple credit cards. The findings suggested that the firm may, in fact, benefit from encouraging, rather than discouraging, users to rebid. Similar to Spann et al.'s (2004) study, the greatest limitation of the study lies in the assumption that consumers are perfectly informed about the firms' threshold prices. In reality, Priceline.com does not provide threshold prices or the density function for these thresholds.

Chernev (2003) experimentally investigated the single-bid mechanism that Priceline.com uses. The researcher developed a conceptual framework regarding consumers' price articulation and compared the NYOP method with price-selection tasks, in which consumers were presented with a set of possible prices and asked to select the price they found most acceptable. Chernev (2003) proposed that consumers would perceive the price-generation strategy (i.e., the NYOP

method) to be inferior to the simpler price-selection task. This argument was based on the researcher's observation that there are no readily available reference prices in the NYOP method and that the absence of reference prices increases the degree of uncertainty. Without reference prices, the NYOP method appears to require consumers to propose their prices from a virtually void space. Therefore, it seems simpler for consumers to choose a price from an existing set.

Chernev's (2003) conceptual framework was built on the basis of a correspondence between a monetary scale and consumers' expected utility. In his framework, consumers have a clear perception of the endpoints of the monetary scale, that is, the highest price and the lowest price. The endpoints of their utility scale then are linked correspondingly to the monetary scale. In this context, a consumer's task is to determine the price P that corresponds to the utility that he/she expects to receive from the product. To elicit his/her WTP, the consumer must equate the endpoints and match the proportional change in the utility scale with a proportional change on the monetary scale. To illustrate, consider a consumer who knows that the lowest and highest fares for his/her trip are \$199 and \$399, respectively. The corresponding utilities to those prices are $U(\$199)$ and $U(\$399)$. The consumer then determines the utility from a particular offering (say, \$250) under consideration and corresponds this price and utility in relation to $U(\$199)$, $U(\$399)$, and $U(\$250)$. Note that this subjective interpolation process hinges on the availability of a reference price range, which is used as a benchmark in the price articulation process.

Chernev (2003) argued that, on many occasions, especially in price-generation tasks such as those required in a NYOP procedure, consumers do not have readily available reference prices. As a result, price articulation can be represented as a two-stage process, whereby consumers first need to evoke the range of possible values and then, using the utilities of these

values as benchmarks, determine their utility for the product and articulate this utility on a monetary scale. The researcher proposed that the requirement for extra cognitive efforts would make the price-generation task less favorable to consumers when compared to the price-selection task, in which a salient range of possible prices is offered.

Chernev's (2003) study demonstrated that consumers often prefer a price-elicitation task, such as selecting a price from a set of prices, which offers less flexibility and is more restrictive in allowing them to express their WTP, a phenomenon contrary to popular belief that more choice is always better. The researcher argued that the outcome that the NYOP method was less favorable than a price-selection method was due to its absence of a readily available reference price range. He showed that consumers' price-generation (i.e., a NYOP mechanism) processes were moderated by the presence of either an externally provided or an internally generated reference price range. Although the importance of a reference price in consumers' price elicitation was emphasized in Chernev's (2003) study, several crucial aspects of the conceptual structure of a reference price were missing. First, the study presumed that consumers used either internal reference prices or external reference prices exclusively, but did not consider the possibility they could use both. Researchers have shown that consumers use both types of reference prices and that the prices can act jointly to influence consumers' value elicitation (Mayhew & Winer, 1992; Mazumdar & Papatla, 2000). Therefore, respondents in Chernev's (2003) experiments who were presented only with an external price range also might have used some price information from experience or prior knowledge. Also, respondents who were asked to form a pre-choice internal price range might have preferred to incorporate external prices if such information had been available.

Second, Chernev's (2003) study equated the concept of reference price as a range of prices, including the highest price and the lowest price. The researcher's stimulus manipulations also promoted the use of this concept in the experiments. The conceptual structure of reference price was based on the researcher's theoretical framework of consumer price articulation, in which a scale of expected utilities corresponds to a scale of monetary terms, i.e., prices. However, the assumption that consumers always have well-defined perceptions of a scale of prices ranging from the lowest to the highest is questionable. Researchers also have shown that consumers use various price information as reference prices, such as the average price of similar products and the price most frequently charged (Kalyanaram & Winer, 1995; Lowengart, 2002).

Emotion in Decision Making

Although researchers have used outcome feedbacks in both WTP and NYOP studies (Hann & Terwiesch, 2003; Wertenbroch & Skiera, 2002), they have not investigated consumers' emotional responses to the feedbacks. Nor have they examined consumers' feelings about the process of using a NYOP method or stating their WTP. The emotional side of decision making is clearly important, especially for a new business model which aims to attract more customers. However, little scholarly attention has been given to the topic. Compared with the huge amount of literature dealing with how people think, and should think, about their decisions, the research on how people feel about the decision process and its outcomes is limited (Connolly & Zeelenberg, 2002). Regret is the emotion that has received the most attention from decision researchers.

Perhaps the best known of the early regret studies is by Kahneman and Tversky (1982). In their study, students were asked to assess the regret that would be felt by two investors, both of whom will lose some money; one as a result of buying a particular stock, and the other as a

result of holding on the same stock. Most respondents thought that the active buyer would feel more regret than the passive holder. The majority of the research on regret has focused on reactions to actions (commissions) and inactions (omissions). There has been substantial evidence to support the phenomenon that outcomes achieved through decisions to change the status quo generally lead to more intense regret than the same outcomes achieved through decisions to maintain the status quo. However, just the opposite pattern emerged from a study by Gilovich and Medvec (1995). They found that people asked to recall real-life regrets tended to recall omissions more frequently than commissions.

To accommodate the conflicting results from previous research on regret, Connolly and Zeelenberg (2002) proposed a model of regret called Decision Justification Theory (DJT). The DJT postulates two major components of decision-related regret; one associated with the evaluation of the outcome and the other with the feeling of self-blame for having made a poor choice. The two components do not necessarily go together. Someone might experience high self-blame even when the outcome is not bad, whereas someone might feel regret about a bad outcome even when no self-blame is involved. Of course, most decisions that result in bad outcomes generate some mixture of the two regret components. According to the DJT, the key determinant of the feeling of regret is whether or not a person feels his/her decisions are well justified. For example, a person may feel regret about driving home inebriated even though he/she arrives home safely. The regret results from the realization that the decision to drive was entirely unjustified.

Studies have shown support for the DJT. In Inman and Zeelenberg (2002)'s study, the results of consumers' decisions to make either repeat purchases or switch products showed that regret over poor outcomes was associated not with whether the consumer switched or stayed, but

with whether or not the consumer felt the decision was justified. Other researchers examined the regret experienced when people behaved in ways they did not originally intend; unjustifiable behavior amplified regret independently of the outcomes of the behavior (Connolly & Zeelenberg, 2002).

The DJT also may provide a parsimonious account of some of the earlier findings on regret. For example, in Crawford, McConnell, Lewis, and Sherman's (2002) study, subjects were induced to follow the (bad) advice of an unknown stranger as to which of two football teams to bet on, despite having detailed and useful information on which to base their bets. After they had bet and lost, they felt regret mainly because they could not justify the decision, that is, trusting the stranger. Also, in a study of the role of decision responsibility in regret, Zeelenberg, Van Dijk, and Manstead (2000) found that students who made decisions for themselves to change course sections felt more regret if the outcome was bad than students who had the same outcome imposed on them by an arbitrary computer reassignment. Apparently, the self-choice decision was harder to justify than the computer reassignment.

Although the DJT may provide a parsimonious framework for studies of regret, there are limited theoretical and systematic definitions of justification. Previous studies showed that behavioral inconsistencies (Connolly & Zeelenberg, 2002), "irrational" purchasing decisions (e.g., a consumer had bought the product several times before, liked it, but switched anyway) (Inman & Zeelenberg, 2002), a tendency to rely on others' advice (Crawford et al., 2002), and personal responsibility (cannot blame others) for outcomes of decisions (Zeelenberg et al., 2000) are associated with unjustifiable decisions. Despite the important role of information in decision making, there is little research that investigates the relationship between input information and regret about bad outcomes and how information relates to decision justification.

There are many ways to deal with negative outcomes. Sometimes, one can cope by taking remedial actions such as switching classes, quitting jobs, or taking different advice. Other times, there is no effective action to be taken. Then, people engage in “psychological work” to lessen the pain of the negative outcomes. The DJT focuses on the psychological approach. The process of decision justification resembles the process of the psychological dissonance reduction. That is, people try to justify their decisions to reduce the cognitive dissonance associated with the negative outcomes and alleviate the pain of regrettable decisions. When our decisions get us “off course” in some way, we feel more comfortable if we can take actions to set us right again.

The current study examined consumers’ regret due to a negative outcome when reference price information was and was not available. Employing the framework of the DJT, the investigation was confined to the psychological realm; that is, it aimed to test if the absence of reference price information plays a role in the process of consumers justifying a negative outcome from their decisions and alleviating their feeling of regret. Both cognitive dissonance theory and the DJT would predict that less personal responsibility for a negative outcome results in less regret (Cooper, 1971; Zeelenberg et al., 2000). Incorporating input information into decisions involves assuming personal responsibility for the decision outcomes as well as adding personal control into the decision process. Researchers have found that people feel less regret about negative outcomes which are caused by circumstances beyond their control (Gilovich & Medvec, 1995). Furthermore, researchers have found that having an explanation for a negative outcome from a decision results in lower subsequent regret (Inman & Zeelenberg, 2002). Having limited input information could be a good explanation for a negative outcome from a decision.

Therefore, less input information (i.e., not having reference price information) is expected to be associated with feeling less personal responsibility and having less personal control in a decision situation, which would result in less regret should there be a negative outcome. “If I don’t think I know much about this and what I am doing, I am not surprised by and don’t feel regret about the outcome.”

The DJT also may provide a framework to study another regret-related phenomenon. Some researchers have found that people feel more regret when they fail by a narrow margin rather than by a wide margin (Kahneman & Tversky, 1982; Medvec, Madey, and Gilovich, 1995), whereas others have found that the size of the margin has little or no impact on the experience of regret (Gilbert, Morewedge, Risen, & Wilson, 2004). In Kahneman and Tversky’s (1982) study, participants predicted that people would feel worse if they missed their airplanes by narrow rather than wide margins. Medvec et al. (1995) studied the facial expressions of Olympic athletes and found that bronze medalists (who missed a gold medal by a relatively wide margin) appeared happier than silver medalists (who missed a gold medal by a narrow margin). The rationale behind this phenomenon is that self-blame is one of the key ingredients in the recipe for regret; it is natural that people are likely to feel regret with a negative outcome if they feel personal responsibility for the outcome. So, if a small change in one’s own behavior (e.g., run a little faster) might have changed the outcome (e.g., catch the airplane or be the gold medalist), self-blame would be exacerbated as would the regret.

Gilbert et al. (2004) found that subway riders overestimated how much more regret they would feel if they “nearly caught” their trains than if they “clearly missed” their trains. The researchers agreed with the rationale that self-blame is critical to regret. However, they also argued that people are better at avoiding self-blame than they realize; therefore, the margin of

loss would not influence the actual experience of regret. The researchers did not demonstrate whether their argument would be contingent on some specific situation (e.g., it might be easier to catch the next train than to catch the next plane); nor did they discuss how people would be able to alleviate self-blame hence regret.

The DJT may provide an explanation for the mixed results on the impact of narrow versus wide margins of failure in studies of regret. According to the theory, if a decision is backed up by good reasons and can be easily justified, people may experience less regret over negative outcomes. In other words, if a person can rationalize that the decision was the best in light of the circumstances, he/she would be less likely to feel regret regardless of the margin of failure.

Reference Prices

Information and search for information, especially information about prices, play an important role in consumers' decision making. One of the major theories dealing with consumer information is the "economics of information," which was first proposed by George Stigler in 1961. Numerous empirical studies have applied this theory to consumers' information search behavior in either the durable goods market (Duncan & Olshansky, 1982) or the nondurable goods market (Avery, 1996). One of the propositions of the theory is that buyer perception of price dispersion will affect the extent of search behavior. An assumption behind this proposition is that buyers have had some previous exposure to marketplace prices and have developed some knowledge of the distribution of these prices. Urbany (1986) argued that whether consumers' prior knowledge about prices is abstract or certain affects search costs. Biswas (2004) also proposed that certain market knowledge and experience are positively correlated with consumers' information search efficiency.

Failure to understand the importance of consumers' knowledge of relevant information may lead to a misunderstanding of consumers' search behavior. For example, Hawkins, Best, and Coney (1983, p. 490) argued that "The range of prices among equivalent brands in a product class is a major factor in stimulating external search." The researchers predicted that a wide range of prices stimulates more external search compared with a narrow range of prices. However, the researchers did not consider the effects of consumers' knowledge about the products and prices on the relationship between price range and search behavior. For example, a well-informed consumer may not search intensively for prices of a certain product even if there is noticeable price dispersion. Moore and Lehmann (1980) reported evidence which is consistent with the notion that greater knowledge and experience are associated with fewer searches.

Reference prices, which can be defined as the prices against which buyers compare the offered price of a product or service (Monroe, 1990), are an important component of consumers' product knowledge and experience. The concept of reference price and its impact on consumers' information search and value elicitation demonstrate that contextual market variables are critical to understanding consumer behavior. Traditional economic theory of the consumer tends to omit virtually all market variables except actual price charged and product characteristics and therefore has not found widespread application in consumer research (Thaler, 1985).

Psychologists have developed Prospect Theory (Kahneman & Tversky, 1979) and Mental Accounting Theory (Thaler, 1985) to describe or predict consumer behavior. Thaler's (1985) application of mental accounting to consumer choice may offer an appropriate theoretical foundation for the study of reference prices and consumer value elicitation.

Thaler (1985) developed the concept of mental accounting as a descriptive alternative to the deterministic economic theory of the consumer. He used the concept to move further toward

a behaviorally based theory of consumer choice. The distinctive features of the alternative theory compared to traditional economic theory include: 1) the utility function was replaced with the *value function* $v(\cdot)$ from prospect theory, and 2) price was introduced directly into the value function using the concept of a reference price. The result was a new concept, *transaction utility*.

The assumed shape of the value function (Figure 3) incorporates three important behavioral principles. First, the function is defined over perceived gains and losses relative to some natural reference point. By using a reference point, the theory permits contextual effects to influence decisions. The context of a situation often involves the suggestion of a particular reference point, for example, a reference price in consumers' buying decisions. Second, the value function is assumed to be concave for gains and convex for losses. The difference between \$5 and \$10 seems greater than the difference between \$115 and \$120, irrespective of the sign of the amounts in question. Third, the loss function is steeper than the gain function. This asymmetry is the ultimate justification for loss aversion in choice. A decision maker tends to assign greater weight to negative than to positive consequences. Applied to consumer behavior, researchers also have found that price increases from a certain level have a significantly greater impact on consumer decisions than price decreases from that level (Tversky & Kahneman, 1991).

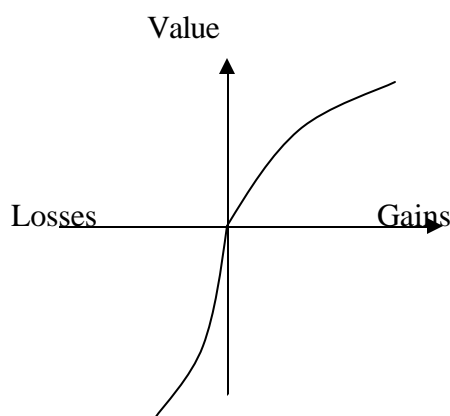


Figure 3. The value function from the prospect theory.

Using this structure to analyze transactions, Thaler (1985) incorporated *acquisition utility* and *transaction utility* into the decision model. The former depends on the value of the good received compared to consumption; the latter depends solely on the perceived merits of the “deal,” which are determined by a reference price.

For the analysis that follows, three price concepts were used. First, p was defined as the actual price charged for some good z . Then, for some individual, define \bar{p} as the value equivalent of z , that is, the amount of money which would leave the individual indifferent between receiving \bar{p} or z as a gift. Finally, let p^* be the reference price for z . Thaler (1985) argued that fairness is the most important criterion to determine the reference price. The acquisition utility was defined as the value of the compound outcome $(z, -p) = (\bar{p}, -p)$, which was designated as $v(\bar{p}, -p)$. Acquisition utility was the net utility that accrues from the trade of p to obtain z (which was valued at \bar{p}). The prominent feature of the model lies in the measure of transaction utility, which depends on the price the individual pays compared to some reference price, p^* . It was defined as the reference outcome $v(-p: -p^*)$, that is, the value of paying p when the expected or reference price is p^* . Total utility from a purchase is the sum of acquisition utility and transaction utility. Thus, the value of buying good z at price p with reference price p^* was defined as $w(z, p, p^*)$ where:

$$w(z, p, p^*) = v(\bar{p}, -p) + v(-p: -p^*) \quad (1)$$

Thaler (1985) showed how transaction utility can influence consumers' WTP by demonstrating that consumers stated a significantly different WTP for identical items (a cold beer) depending on the context of the purchase (a fancy store or a run-down grocery store). The reference price p^* played a crucial role: “while paying \$2.50 for a beer was an expected annoyance at the fancy store, it would be considered an outrageous “rip-off” in a grocery store”

(Thaler, 1985, p. 207). Therefore, the researcher defined the reference price p^* as a fair price, which depends in large part on the cost to the seller.

Thaler's (1985) conceptual framework has been employed empirically. Urbany and Bearden (1989) showed a positive relationship between a buyer's internal reference price and his/her perception of transaction value. Grewal, Monroe, and Krishnan (1998) developed a model in which the acquisition and transaction values were explicitly distinguished. The model incorporated an internal reference price, which was operationalized as the subjects' expected fair prices, into the empirical investigation. The findings supported the idea that the perceived transaction value significantly influences consumers' willingness to buy and intentions to search for product information.

However, one can argue that consumers often do not know the cost to the seller and hence do not have clear knowledge of the fairness of a price if fairness is based on the seller's cost. Evidence from other researchers that consumers use various reference prices also supports the notion that the definition of p^* as a fair price might be too narrow. Researchers have identified over 20 different representations of reference price, such as last price paid (Monroe, 1971), average price of similar products (Gabor, 1977), price most frequently charged (Olander, 1970), evoked price (Rao & Gautschi, 1982), price limits (Monroe, 1990), expected current price (Winer, 1986), and expected future price (Emory, 1970).

Researchers also have shown that consumers use multiple reference prices. Rajendran and Tellis (1994) referred to the internal reference price as the temporal reference price (formed based on past prices paid or observed) and the external reference price as the contextual price (formed based on the lowest observed price at the point of purchase). The researchers found both reference prices to be significant predictors of consumers' brand choice. Multiple reference

prices also were empirically tested by Mayhew and Winer (1992) in their analysis of scanner data by providing for an internal reference price (defined as based on actual or other price concepts) and an external reference price (defined as observed regular prices printed on shelf labels). The findings suggested that both reference prices had significant effects on purchase probabilities.

The single concept of the fair price as the reference price in equation (1) cannot capture the multi-dimensionality of the reference price. This study proposes a more general formulation; for example, equation (1) could be written as:

$$w(z, p, p^*) = \alpha v(\bar{p}, -p) + \beta v(-p: -f(p_{int}^*, p_{ext}^*)) \quad (2)$$

where α is the weight given to acquisition utility and β is the weight given to transaction utility. If $\beta=0$ then the standard theory applies. On the other hand, if $\alpha=0$, an extreme impulsive purchase, which solely results from a feeling of getting a good bargain, applies. Also, instead of using a single fair price p^* , equation (2) employs $f(p_{int}^*, p_{ext}^*)$, denoting a function of internal reference prices such as a fair price, a past price, and an external reference price such as listed prices for similar products. It therefore suggests that consumers may incorporate multiple reference prices into the reference structure.

The theory presented by Thaler (1985) represents a hybrid of economics and psychology and has drawn more and more attention. The study of consumer behavior may be the most logical field in which this combination should be developed. The Mental Accounting Theory can offer a theoretical framework for the consumer behavior literature, including the reviewed consumer WTP studies.

The theory can direct WTP studies in three ways. First, both the BDM and the NYOP procedures feature a point-of-purchase decision, which emphasizes the importance of the

contextual structure of a purchase environment. The Mental Accounting Theory suggests that differences in the transaction context may induce different levels of utility and thus different WTPs.

Second, researchers can incorporate the model into the WTP elicitation procedures to investigate whether certain contextual variables, especially reference prices, affect consumers' WTP. Thus, the drawback of the BDM procedure, that is, the absence of reference prices, can be overcome. For the NYOP (or price-generation) procedure, the model may offer an alternative explanation for Chernev's (2003) finding that consumers prefer price-selection tasks over price-generation tasks. That is, the preference may not be due to the absence of reference prices, but due to the complexity of incorporating various reference prices, such as knowledge of a fair price or past prices, into the transaction function.

CHAPTER 3

METHODOLOGY

As introduced in the first chapter, this study aimed to investigate the impact of reference prices on consumers' use of the online NYOP method. Based on the previous research and the theoretical framework discussed in the second chapter, the principal hypothesis of this study was that consumers incorporate reference price information when eliciting their WTP. The methods in this study were designed to examine consumers' WTP with an open-ended format via a simulated market price strategy, that is, the online NYOP method. Three experiments were designed to test the following research hypotheses, which were proposed to answer the research questions stated in the first chapter.

Hypotheses

H1: Consumers will be more comfortable using the NYOP method when external reference prices are provided or internal reference prices are generated a priori compared with using the NYOP method without reference prices.

This hypothesis aimed to replicate Chernev's (2003) finding that price elicitation is moderated by the presence of a readily available reference price. It differs from Chernev's approach in that it does not involve comparison between a NYOP method and a price-selection method. Instead, comparisons were made between the NYOP method with and without reference prices. Chernev's study presumed that reference prices were unavailable in the NYOP method and proposed that was the reason consumers preferred selecting a price from a list of prices over the NYOP method. The current study did not assume that reference prices must be unavailable in the NYOP strategy. Instead, it assumed that a NYOP method without readily available reference

prices requires more effort for consumers to either form an internal reference price or to search for an external reference price than a NYOP method that provides readily available reference prices. Another important difference between the current study and Chernev's (2003) work is that the only format Chernev used for reference prices was a price range. In the current study, prices were provided in a list format in one experiment and as a single price in the other two experiments. Neither internal and external reference prices were available for the subjects in the control groups in the first two experiments

H2: Consumers will believe the probability that their bid will be accepted is higher when reference prices are available than when reference prices are not available. Furthermore, consumers will be more confident in their bids when both internal and external reference prices are available than when only one type of reference price is available.

In addition to replicating Chernev's (2003) result that the presence of reference prices increases participants' confidence in the success of their bid, the current study aimed to go a step further to compare the effects of internal and external reference prices on consumers' confidence. The key implication of the previous research in the area of reference prices was that two types of reference prices exist: internal prices, which are in the minds of consumers, and external prices, which are stimuli presented in the physical environment. Most research concerning the two types of reference prices has proceeded along separate paths. Empirical studies suggest that consumers use both types of prices to make purchase decisions (Mayhew & Winer, 1992). However, there is little evidence indicating whether consumers are better off (i.e., in a NYOP setting more likely to place a bid that will be accepted) if they use both types of reference prices instead of only one of them. Therefore, this hypothesis was designed to investigate the impacts of the two types of reference prices when they are presented together in the consumers' purchase environment.

H3. Considering that both internal and external reference prices potentially are operative at the point of purchase, external reference prices will play a more important role than internal reference prices in consumers' value elicitation in the NYOP format.

In this study, an external reference price, specifically, an average price of similar goods or services, was made easily accessible to consumers. Making a reference price available is a reasonable condition considering the ease of obtaining search information in the online shopping environment. Consumers may perceive using external reference prices to be cognitively easier and to increase the likelihood of placing a successful bid compared to when they must generate internal reference prices. However, the relative ease of generating a bid likely to be accepted may depend on the specific knowledge and/or experience held by an individual consumer. That is, consumers who have specific knowledge about the price of the goods or services or who have recently used the goods or services may find it easier to generate a relatively precise internal reference price than other consumers.

H4a. When the outcome is negative, that is, their bid is rejected, consumers who used reference prices to bid will feel more regret than those who did not use reference prices. Furthermore, consumers to whom both types of reference prices were available will feel more regret than those to whom only one type of reference price was available.

According to the Decision Justification Theory (DJT) (Connolly & Zeelenberg, 2002), whether a decision is justifiable plays a key role in determining feelings of regret about an outcome. However, it is unclear from the theory what determines whether a consumer feels a decision is justified when there was a certain outcome. Availability of input information is associated with personal control over the decision process and personal responsibility for the decision outcome. According to the DJT and the cognitive dissonance theory (Cooper, 1971), the

personal control and personal responsibility generated by incorporating input information into a decision makes it more difficult for the individual to understand why there was a negative outcome and thus they experience regret. Central to the rationale behind this hypothesis is an assumed relationship between being able to explain one's decision and experiencing regret. When a decision outcome is negative, people who feel they had a good reason for their decision may experience less regret. Specifically, consumers who see limited reference price information as the reason for the negative outcome may experience less regret. On the other hand, consumers who had reference price information may think they should have made a better decision and experience more regret if there is a negative outcome. The rationale behind H4a is presented in Figure 4.

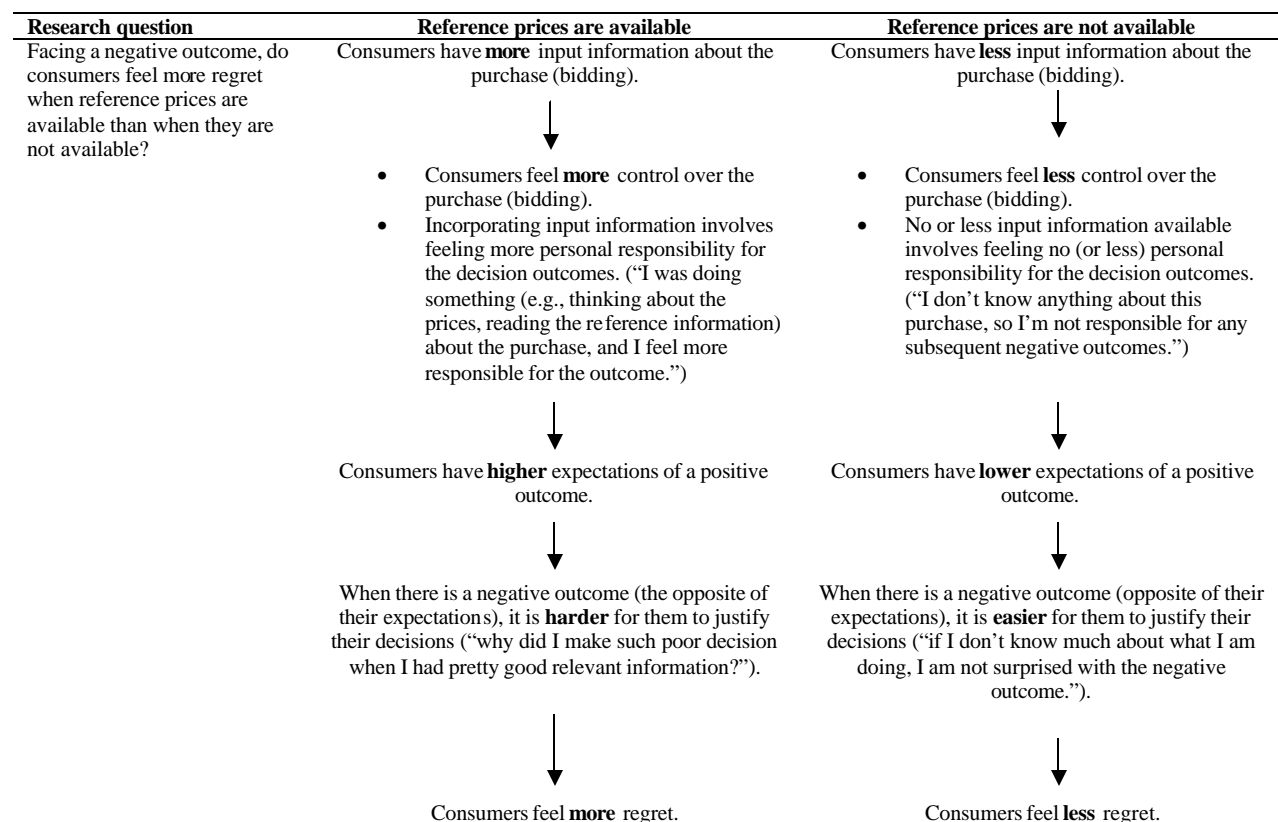


Figure 4. The rationale behind H4a about impact of reference prices on regret.

H4b: When the outcome is negative, that is, their bid is rejected, consumers will feel more regret when the bid failed by a narrow margin than when it failed by a wide margin. However, a lack of reference prices will mediate the impact of the margin of failure on regret.

Similar to the situation in which people feel more regret if they “nearly caught” their airplane than if they “clearly missed” their airplane, a bidder would likely feel more regret if s/he underbid by a narrow margin than if s/he underbid by a wide margin. A narrow-margin result is harder to justify than a wide-margin result because a small increase in the bid price would have changed the outcome. However, when there is limited information (e.g., reference prices), the influence of the margin of failure on regret may be less significant because the lack of reference price information provides a reasonable and defensible justification for the negative outcome.

According to the DJT, this decision justification leads to less regret regardless of the margin of failure. The rationale behind H4b is presented in Figure 5.

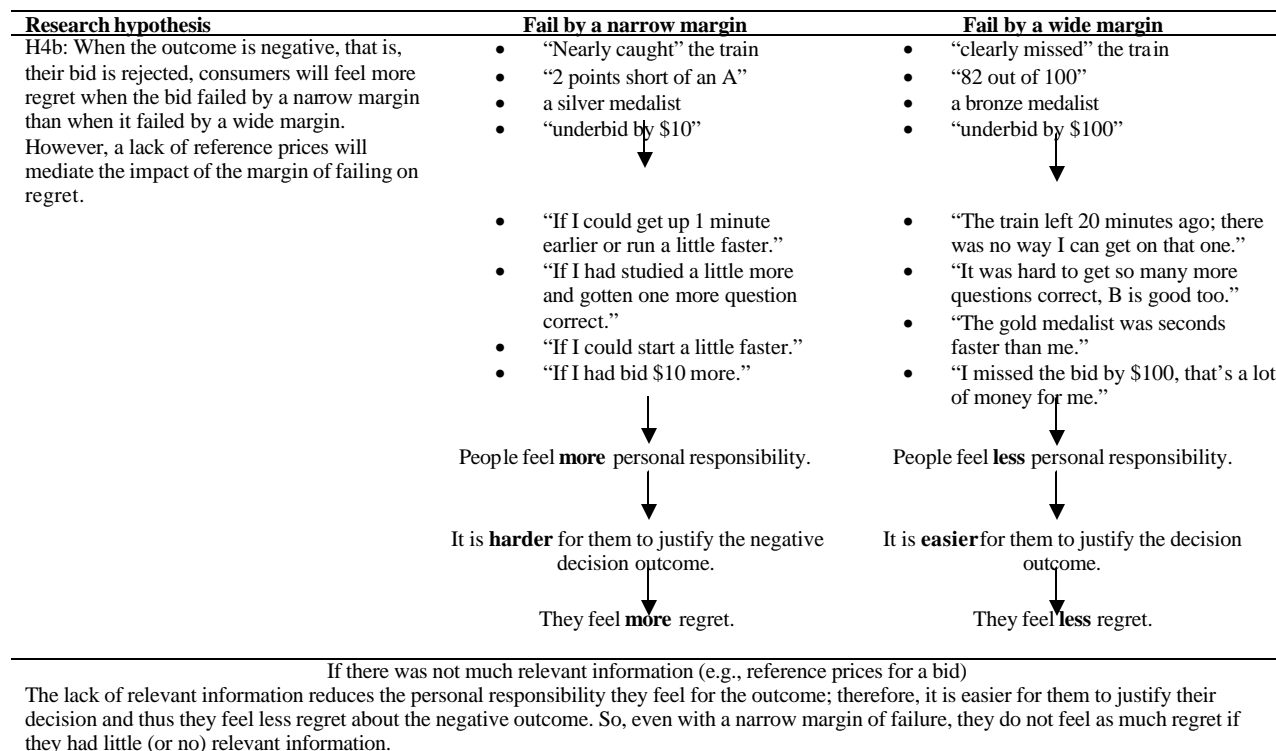


Figure 5. The rationale behind the H4b about impact of margin of failure on regret

H5. The manipulation of external reference prices, such as changing the value of reference prices, will affect consumers' WTP such that introducing higher reference prices will increase the amount of consumers' WTP.

The anchor effect suggests that if a value estimate is set in relation to some arbitrary value (i.e., an anchor), then the value estimate is insufficiently adjusted away from the anchor toward the true value (Tversky & Kahneman, 1974). Anchor effects are remarkably robust, occurring even when anchor values are uninformative. The psychology literature has demonstrated how unrelated numbers can influence decision making; people often form estimates based on an initial anchor, which may or may not be relevant to the decision target, and they adjust from there to yield their final answer (Tversky & Kahneman, 1974). Researchers also have shown that consumers behave differently in search and purchase activities when they face different values of external reference prices in retail advertising contexts such as price promotions from competitors (Liefeld & Heslop, 1985; Urbany, Bearden, & Weilbaker, 1988). In addition, researchers have shown that an arbitrary value provided by sellers and even uninformative reference prices such as the prices of unrelated products strongly influence value estimation by experienced professionals as well as novice consumers (Northcraft & Neale, 1987; Nunes & Boatwright, 2004).

The Experiments

The five research hypotheses were tested in three experiments that used the NYOP method when the two different types of reference prices were and were not provided. Also, the external reference prices were manipulated differently in the different experiments. In Experiment 1, the external reference prices were provided in the form of a list of multiple prices. In the other two experiments, an external reference price was provided as a single price,

specifically, an average price. Consumers' stated WTP, their comfort with and confidence in using different NYOP methods, and their feelings of regret about a negative outcome were examined as a function of the availability and magnitude of reference prices.

The experiments used 300 undergraduate students from a major southeastern university as the subjects, with 120 in each of the first two experiments and 60 in the third experiment. The number of participants was determined to ensure that there were more than 10 subjects per cell of the independent variables. Prior to the experiment, a human subject application was approved by the University of Georgia Human Subjects Office and the Institutional Review Board.

Subjects who participated in one experiment did not participate in any of the other experiments. The subjects were recruited from individual classes at the university. Subjects who volunteered to participate were notified of the time and place of the experiment. All three experiments were conducted via personal computers in a computer lab. There were multiple sessions of the experiments on predetermined dates. Each subject used a personal computer with online access to complete the experiment.

The instructions for the experiments were announced by the investigator at the beginning of each session and also were available to the subjects online during the experiment. (See Appendix A for instructions). The subjects worked at their own pace. After they answered all of the questions, an appreciation and debriefing message was presented on the computer screen. As an incentive for their participation, subjects were given extra credit for a course they were taking. An alternative way of earning the same amount of extra credit also was provided by the instructor to those who did not want to participate in the study.

Experiment 1

This experiment investigated the impact of the availability of internal and external reference prices on consumers' use of a NYOP method and aimed to test H1, H2, H4a, and H4b. The experiment was a 2 (margin of failure: narrow vs. wide) x 4 (availability of reference prices: internal reference price only, external reference price only, internal and external reference price, and control group in which there was no reference price available) between-subject design. To test H1 and H2, the experiment was a one-factor design. That is, only the availability of reference prices was taken into account as an independent variable because there was no regret involved in the first two hypotheses. The goal of Experiment 1 was to offer preliminary evidence that consumers will be more comfortable expressing their WTP using a NYOP method and more confident in the success of their bid when reference prices are available than when reference prices are not available. Also, the experiment examined whether consumers will be more confident in the likelihood of the success of their bid using a NYOP method when both internal and external reference prices were available compared to when only one type of reference price was available. In addition, consumers' feelings of regret due to negative outcomes were examined with regard to the availability of reference prices and the margin of bid failure.

Constructs and variables

The independent variable was the availability of reference prices, which was based on manipulation of the four reference price groups. There were three dependent variables in Experiment 1. The first, subjects' confidence with their WTP, was a continuous variable which stated the subjects' estimation of the probability that their bid would be accepted. The measurement ranged from zero to 100 with zero indicating certainty their bid would not be accepted and 100 indicating certainty their bid would be accepted. The second dependent

variable, subjects' comfort with using the NYOP method, was a construct that was measured by their agreement (on a seven-item scale ranging from completely agree to completely disagree) to the following four statements: "I feel comfortable using this method to buy this ticket," "It was hard for me to name the price for this ticket," "I would feel better if I had been given a price I could accept or reject instead of bidding," and "I would feel better if I had more information." The subjects' feelings of regret was a construct that was measured by responses (on a seven-item scale ranging from completely agree to completely disagree) to the following five statements: "I should have bid differently," "I did the best I could," "I regret my decision to bid the price I bid," "If I could do it over again, I would change my bid," and "I would have been happier if I had bid differently." The last two items were adopted from Inman and Zeelenberg's (2002) three-item regret scale that assessed their subjects' regret in decisions to switch or repeat purchases of airline tickets, backpacks, and lodging services. A higher score represented a higher level of agreement with the statement. Note that some of the items were reverse coded in the analyses.

Also, control variables were used in Experiment 1. The control variables were subjects' age, gender, experience with the Internet, experience with online shopping, experience with airline ticket purchases, and experience with the NYOP method. The variables and the corresponding measurements, hypotheses, and research questions are listed in Table 1.

Methods and Procedures

The 120 subjects were assigned randomly and equally to one of the eight conditions: stating their WTP via a NYOP method with no reference price available (the control group) and facing either of the two margins of failure; receiving external reference prices only and facing either of the two margins of failure; generating internal reference prices only and facing either of the two margins of failure; and using both types of reference prices and facing either of the two

margins of failure. The subjects were asked to bid the specific dollar amount of their WTP using an open-ended format for a round-trip airline ticket from Atlanta to Boise, Idaho. However, their WTP value was not used as a dependent measurement in this experiment. Instead, the primary interests of the investigation were how comfortable the subjects were with using the NYOP method, their expectations of the probability their bid would be accepted, and how much regret they experienced when their bid was rejected.

The experiment was conducted using an online survey tool, Survey Monkey. After a brief verbal explanation of the nature of the study by the researcher, that is, to investigate consumers' online shopping behaviors, subjects were asked to open the introductory web page, on which the following scenario was presented:

Suppose you are participating in a travel study program and have to fly from Atlanta to Boise, Idaho and return to Atlanta. You must buy your own round trip airline ticket. You decide to buy your ticket through a Web-based travel agency that allows travelers to name their own price. The name-your-own-price method works as follows: you enter information online about where and when you want to go and explicitly state how much you are willing to pay. The online agency then searches for an airline willing to release a seat at your price. If the agency finds a ticket at your price, it will purchase the ticket for you and charge you the exact amount you have stated. The ticket cannot be changed, transferred or cancelled. If your bid is accepted, you could save some money. But, if your bid is too low to be accepted, you won't get a ticket. Also, you won't be allowed to bid again for the same item through this agency for at least 72 hours.

The subjects were assigned randomly to one of the eight experimental conditions, with 15 students in each condition. Prior to submitting their bids, subjects in the internal-reference-price

group were asked if they had any price information in mind for a Atlanta-Boise round trip. The intent of this question was twofold. First, it raised a question about the subjects' internal information about the price to prompt them to think about the route and related price information. Second, the question was used to identify subjects who already had internal reference prices in mind. Then, subjects were asked for their thoughts about a fair price and/or a normal price for the route in question. Again these questions were asked to prompt subjects to think more about a price for the route. Even without price information in mind, subjects might have opinions about a normal or fair price for the route based on their knowledge and/or experience with airline travel. Their opinions about the normal or fair price might have acted as a kind of internal reference price that influenced subjects' value elicitation.

Subjects in the external-reference-price group were not asked whether they had any price information in mind nor their opinions about a normal and/or fair price for the route. Instead, they were offered a web page on which a list of fares for multiple round-trip Atlanta to Boise tickets from several airlines was presented. Subjects in the internal/external-reference-price group were asked if they had any price information in mind and their opinion about the normal and/or fair price for the route; then they were offered the web page with external reference prices. The subjects in the control group were not given any external reference prices nor were they asked to pre-articulate any internal reference price information.

An important manipulation in the experiment was that all of the subjects were told that they would not be allowed to search for relevant information online. Without this restriction the researcher could not know whether subjects used external reference prices not provided by the researcher and, if they did, how those influenced their bids.

The destination in the scenario, Boise, Idaho, was selected to create a route with which subjects were not likely to have prior experience nor to be familiar. Thus, the scenario facilitated the manipulation of the experimental conditions such that the subjects in the control and the external-reference-price groups were less likely to have access to any internal reference price information. A drawback of this manipulation was that the route might have been less meaningful to subjects in the internal-reference-price group and the internal/external-reference-price group, making it more difficult for them to pre-articulate an internal reference value. Nevertheless, this experiment aimed to test the effect of the mere existence of reference prices on subjects' comfort with and confidence in using the NYOP method as well as their regret over a negative outcome. Therefore, it was expected that even some vague estimation (on normal and/or fair prices) or a pure guess prior to the WTP elicitation would mentally prepare subjects for the value elicitation, thus influencing their feeling of comfort and their confidence in the likelihood that their bid would be successful when they used the NYOP method.

After the subjects were presented with the experimental scenario and all subjects except those in the control group were presented with the reference price manipulation, the subjects were asked to state their WTP in the form of a single price in an open-ended format. Then, subjects were asked to indicate their comfort with using the method, as well as their perception of the likelihood that the bid they submitted would be accepted. After answering the questions regarding their comfort and confidence with using the methods, all subjects were given negative feedback; that is, they were informed that their bid was rejected. One-half of the subjects (randomly selected) in each of the four groups was told that they underbid by \$10; the other half was told that they underbid by \$100. Then all subjects answered questions regarding their regret about the negative outcome.

Finally, subjects were asked to answer questions about their demographic characteristics (gender and age), experience with online searching/shopping, experience with and frequency of buying international and domestic airline tickets, and experience with and frequency of using the NYOP method. The questions regarding subjects' experience with online activities were adopted from the questionnaire used by Nie and Erbring (2000) and the Pew Internet and American Life Project (2003) to investigate consumers' online behavior. The questions about their Internet activities were how often they use the Internet and how often they shop online.

Experiment 2

The route of Atlanta-Boise employed in Experiment 1 was chosen to facilitate the manipulation of the external-reference price and control groups. However, a limitation of the manipulation was that the unfamiliar route could make the internal price generation less meaningful for some subjects who had no idea about the route. For a more meaningful manipulation with regard to subjects' internal reference price generation, a different and more common route with which subjects were more likely to be familiar was needed. Thus, Experiment 2 used the Atlanta-Washington, D.C. route. Also, it aimed to provide further evidence as to whether the availability of external reference prices increases subjects' comfort with the use of the NYOP method and their confidence that their bid will be accepted, no matter whether the reference prices are presented in a list (as in the previous experiment) or as the average price of similar products or services (as in this experiment).

Experiment 2 focused on testing H3. It was a 2 (margin of fail: narrow vs. wide) x 4 (availability of reference prices: internal reference price only, external reference price only, internal and external reference price, and control group in which there was no reference price available) between-subject design. One goal was to replicate the results of the first experiment;

that is, would subjects who were offered an external reference price be more comfortable with using the NYOP method, more confident in their bids, and experience a different level of regret when the availability of reference prices and margins of failure were different? However, in Experiment 2, the reference price was presented as a single price instead of a list of prices as in Experiment 1. Also, Experiment 2 aimed to compare the impact of the availability and value of the two different types of reference prices on subjects' WTP elicitation. Thus, subjects' stated WTP was a dependent measure and the deviation of the value of their WTP from the reference prices was analyzed.

Constructs and Variables

The dependent variables used in Experiment 2, that is, subjects' comfort with using the NYOP method, their confidence that their bid would be accepted, and their regret after experiencing a negative outcome, were the same as those used in Experiment 1 (see Table 2). A fourth dependent variable was added in Experiment 2. The difference between subjects' stated WTP values and the reference prices was used to test the hypothesis that external reference prices play a more important role than internal reference prices in consumers' value elicitation in the NYOP format. Subjects were expected to depend more on the external reference price than on the internal reference price; therefore, the difference between the WTP and the external reference price was expected to be less than the difference between the WTP and the internal reference price.

Methods and Procedures

The methods and procedures were similar to those in the first experiment. The 120 subjects were assigned randomly to one of four groups: internal reference price, external reference price, internal/external reference price, and control group. They were asked to state

their WTP in the form of a single price in an open-ended format. Also, they were asked to indicate their comfort with using the NYOP method as well as their expectations of the likelihood of the success of their bids. As in Experiment 1, the subjects were told their bids were rejected and asked questions to assess their regret. Also, as in Experiment 1, subjects were asked to answer questions about their demographic characteristics (age and gender), experience with the Internet, experience with online shopping, experience with airline ticket purchases, and experience with the NYOP method. Finally, subjects in Experiment 2 also were prohibited from searching for information online.

This experiment differed from the first experiment in two aspects. First, although subjects again were told the purpose of their travel was to participate in a study program, the travel route was Atlanta-Washington, D.C, not Atlanta-Boise, Idaho. Second, the manipulation of the internal and external reference prices was different than in the first experiment. For the internal reference prices, subjects in Experiment 2 were asked to pre-articulate one value as a reference price, specifically, an average price. This was in contrast to Experiment 1 in which subjects were asked to offer any price information that came to mind and in any format. Subjects also were asked to answer questions regarding their opinion about the normal and fair price of the route. This manipulation aimed to 1) create a difference between groups with and without internal reference prices, and 2) create a predisposition among subjects who did not have any prior price information in mind to think about and have some idea about an internal reference price.

The manipulation of external reference prices also was different in Experiment 2 compared to the previous experiment. Subjects in Experiment 2 who were given external reference prices were given a single reference price, that is, an average price across all airlines that fly the specific route.

Combining the two changes, the manipulations aimed to address two issues. First, subjects were expected to pre-articulate relatively meaningful internal reference prices given the greater likelihood of familiarity with the travel route. Second, the same format for the internal and external reference prices made the two types of prices more compatible and therefore their impacts on subjects' WTP elicitation could be compared.

A limitation of this manipulation was that the researcher could not ensure that subjects in the control and external-reference-price groups stated their WTP without any internal reference price in mind even though they were not asked to pre-articulate one. Many subjects may have had relevant experience or valid estimations in mind. If so, it is inevitable that they referred to those reference prices to form their WTP. This limitation might make comparisons between the internal-reference-price group and the external-reference-price group questionable. However, a within-subject analysis of the results from the groups with both types of reference prices might provide a relatively more valid comparison of the impacts of the two types of reference prices on subjects' WTP elicitation.

Experiment 3

This experiment aimed to test H5. The experiment was a 2 (external reference price: high vs. low) x 2 (margin of failure of bid: narrow vs. wide) between-subject design. To define the high and low reference price values, the researcher conducted an a priori information search to generate a list of prices for the specific route found using various websites. A high price was obtained by averaging the high end of the price list, whereas a low price was obtained by averaging the low end of the price list.

In Experiment 3, the format of the external reference price was the same as in Experiment 2, that is, a single average price. This format facilitated comparison of the impact of different

levels of the external reference price on subjects' WTP elicitation. The goal was to examine whether a relatively higher level of external reference prices was correlated with a higher value of WTP.

Constructs and Variables

Although the aim of Experiment 3 was to test H5, the questions regarding subjects' comfort with using the NYOP method, their confidence in the success of their bid, and their regret about a negative outcome also were asked. Also, the constructs and the modification of the dependent variables were the same as in the previous experiments. Considering the different manipulation of this experiment with respect to the availability of reference prices, the dependent variables were tested differently than in Experiments 1 and 2. The primary dependent variable in Experiment 3 was subjects' WTP, a ratio-level variable stated by the subjects in an open-ended format. Table 3 presents the variables with the corresponding research questions, hypotheses, and measurement methods.

Methods and Procedures

The methods and procedures were similar to those in the previous experiments. The 60 subjects were assigned randomly to one of two groups. In one group, the subjects were presented with a high external reference price which was predetermined by the researcher as described earlier. The other group was presented with a low reference price. Only an external reference price was presented and the subjects were not asked to pre-articulate any internal reference price. As in the earlier experiments, subjects were prohibited from searching online for any additional data. The subjects were asked to state their WTP in the form of a single price in an open-ended format. Questions also were asked concerning subjects' comfort with using the NYOP method and their expectations of a successful bid. In addition, subjects were asked about their regret

when they were told they either underbid by \$10 or by \$100 (randomly assigned). In the experimental scenario, an unfamiliar travel route, Atlanta-Tokyo, Japan was offered to decrease the likelihood that subjects would have an internal reference price in mind that would influence their WTP. This control was needed given that the purpose of the experiment was to assess the impact of different levels of external reference prices on subjects' WTP. As in the previous experiments, subjects also answered questions about their demographic characteristics (age and gender), experience with the Internet, experience with online shopping, experience with airline ticket purchases, and experience with the NYOP method.

CHAPTER 4

ANALYSIS AND RESULTS

Results of the experiments are reported in this chapter. The results are described in relation to the research hypothesis tested in each experiment. For each experiment, descriptive statistics of the participants are presented first, followed by the results based on the tests of the constructs and hypotheses.

Experiment 1

The Participants

Statistics describing the participants' age, gender, experience with Internet use and online shopping, and experience with the NYOP method are presented in Table 4. One hundred and twenty undergraduate students from a major southeastern university participated in Experiment 1. Most of the participants were in their early 20's and just over one-half (55%) were female. As college students, their online activities were fairly intensive. Nearly 90% of the participants used the Internet about once a day or more often, indicating that they were fairly familiar with the online environment. The online activity that was used most by the participants was email, followed by homework (97%) and buying goods and service online (83%). Also, a large percentage of the subjects (73%) used the Internet to search for information about goods and services, indicating that online search and shopping are important online activities for them. In fact, over 60% of the subjects reported that they shop online several times a month or more often.

A majority (62%) of the participants had experience with airline ticket purchases. Among those who had bought domestic or international airline tickets, most had bought their tickets once

or several times a year in the last three years. The number one source they had used to buy their tickets was the airline websites. Twelve subjects had used Priceline.com or another NYOP website to buy airline tickets. Among all of the participants, 18 had experience with the NYOP method, either buying airline tickets or other goods or services.

Tests of the Constructs

Two constructs, the subjects' comfort with using the NYOP method and their regret about a negative outcome, were tested for their unidimensionality and reliability. Factor analysis and correlation analysis were used for the tests.

Factor analysis

The results of the factor analysis for the construct of subjects' comfort with using the NYOP method are presented in Table 5. One factor was extracted, including all four of the items used in Experiment 1. The results indicated that the four items formed a unidimensional construct.

The results of the factor analysis for the construct of subjects' regret about a negative outcome are presented in Table 6. Two factors were extracted, indicating the construct was not unidimensional. The item "I did the best I could" did not fit into the construct of regret, while the other four items used in the experiment formed a factor related to subjects' regret about a negative outcome.

Reliability tests

A correlation analysis was used to assess the reliability of subjects' responses to the items related to their comfort with using the NYOP method and their regret about a negative outcome. The results of the reliability tests for the construct of comfort are presented in Tables 7 and 8. Table 7 reports Cronbach's coefficient alpha, the correlation between each item and the total of

the remaining items, and Cronbach's coefficient alpha using the remaining items for both the raw values and the standardized values. The overall Cronbach's alphas of .76 for raw values and standardized values, which were greater than Nunnally's (1978) suggested value of .70, indicated that the reliability of the subjects' responses to the construct of comfort was acceptable. Also, the results presented in Table 8 suggested that subjects' responses to the four items were significantly correlated with each other. However, one item, "I would feel better if I had more information," had a relatively low item-total correlation coefficient. Also, removing this item from the construct of comfort increased the Cronbach's alpha coefficient ($\alpha = .77$), indicating that removing this item made the construct more reliable. In addition, an examination of Table 6 indicated that the above-mentioned item had relatively low inter-item correlation coefficients with other items in this construct. In the factor analysis the item had the lowest factor loading score, although it did load on the one factor extracted (Table 5). Therefore, combining the results from the factor analysis and the correlation analysis, the item was removed from the construct of comfort in subsequent analyses.

The results of the reliability tests for the construct of regret are presented in Tables 9 and 10. The overall Cronbach's alpha of .79 for raw values and .78 for standardized values indicated that the reliability of the subjects' responses to the construct of regret was acceptable. However, one item, "I did the best I could," had a fairly low item-total correlation coefficient ($\alpha = .02$) (Table 9) and statistically insignificant inter-item correlation coefficients with the other items in this construct (Table 10). The results coincided with the results of the factor analysis; that is, the above-mentioned item was not in the factor that contained the other items in the construct of regret (Table 6). Thus, the item was removed from the construct of regret in subsequent analyses.

In fact, removing the item made the construct more reliable, considering that the Cronbach's alpha increased significantly ($\alpha = .89$) by deleting the item from the construct.

Participants' Uses of the NYOP Method

Statistics describing the participants' uses of the NYOP method to bid their prices are presented in Table 11. The majority (80%) of the participants in the internal/external- and internal-reference-price groups reported that they had some price information in mind. Over one-half (25 out of 48, or 52%) of the participants who reported they had prices in mind provided a single price ($M = \$247$, $SD = \$162$). Among the participants who provided a price range, about one-half (11 out of 23, or 48%) provided a range that fell in the interval of \$200 to \$500. Among the other respondents, the majority (7 out of 12, or 58%) provided a price range below \$200 with the lowest value of \$75; the balance of the sample provided a price range above \$500 with the highest value of \$1000. Forty-five percent of the participants thought the normal price of the route would be from \$200 to \$400, whereas only 15% of the participants thought the fair price would fall into this range. Although the majority of the participants reported they had a price in mind, over one-half (53%) indicated the price was a guess. In contrast, 35% and 47% of the participants indicated that the price was based on experience and knowledge, respectively.

Across Experiment 1, regardless of the manipulation of the reference prices, the average amount the participants bid for the ticket was \$274, which was fairly close to their average internal reference price. On average, the participants were uncertain about their bid (a mean probability of 55.4 with 100 representing absolute certainty of success). Also, about one-third of the participants (32%) reported comfort scores of more than 12. A mean score above 12 indicated that a participant agreed with the statement that s/he feels comfortable using the NYOP method. The mean score of comfort in Experiment 1 was 10.9.

Over one-half of the participants (56%) reported a regret score equal to or above 16. A mean score above 16 indicated that a participant agreed with the statement that s/he feels regret about the negative outcome. The mean score of regret in Experiment 1 was 17.

Hypotheses Testing

Two dependent variables, that is, subjects' comfort with using the NYOP method and their regret about a negative outcome, were modified according to the results of the tests of the constructs. To create a variable measuring subjects' comfort, the scores obtained from each of the three remaining items in the construct of comfort were added up for each subject. Similarly, the scores obtained from each of the four remaining items of the construct of regret were added up for each subject to form a variable measuring subjects' regret.

H1: Consumers will be more comfortable using the NYOP method when external reference prices are provided or internal reference prices are generated a priori compared with using the NYOP method without reference prices.

Before conducting the test of the hypothesis, a model selection task was performed. The model selection was based on two considerations: 1) it would be more informative to examine whether including covariates could improve the model's explanatory ability even though the random assignment of subjects reduced the potential effect of the selection problem on the validity of the results; and 2) there might be some differences with respect to the hypotheses testing if subjects were re-grouped according to their answers to the question about whether they had any internal price information.

First, the simple model and the model with covariates were compared. The simple model contained the variable comfort as the dependent variable and the availability of reference prices as the only independent variable. The full model added subjects' age, gender, experience with

airline ticket purchases, experience with using the Internet, experience with online shopping, and experience with the NYOP method as the covariates. The results in Table 12 suggested that while the pattern was the same with respect to subjects' comfort by reference-price groups, the covariates, that is, subjects' age, gender, and experience with the NYOP method, significantly affected their comfort with using the NYOP method at the $p < .05$ level or greater. Also, an F test was used and the results suggested that the group of the covariates significantly improved the explanatory ability of the model ($F(6, 110)=3.66, p=.0024$). Thus, the hypothesis was tested in a way that the above-mentioned covariates were controlled.

Second, the model using the original group manipulation and the model after re-grouping the subjects by internal price information were compared. The rationale behind the re-grouping of the subjects was based on the manipulation of the internal reference prices: if a subject answered "no" to the question asking him or her whether s/he had a price or a range of prices for the route in mind (Q1 in Appendix A), s/he then might be excluded from the group that had an internal reference price. Thus, subjects were regrouped in the following way: if a subject in the internal/external-reference-price group answered "no" to the internal reference price question, s/he was moved to the external-reference-price group. If a subject in the internal-reference-price group answered "no" to the question, s/he was moved to the control group. However, one drawback of the re-grouping was that subjects in the groups with the internal-reference-price manipulation were asked their opinions about a normal and a fair price, which may have served as an internal reference price and facilitated their decision making. The results of the comparison of the model using the original groups and the model after re-grouping suggested there was no significant difference between the two models (see Tables 12 and 13). For example, the estimates on the effect of reference prices on subjects' comfort had the same pattern; that is, in both

models, only the internal/external-reference-price group showed a significant effect compared with the control group. Also, the parameter estimates and levels of significance for this variable were almost identical in both models. In addition, the parameter estimates and levels of significance for the covariates were quite similar in both models. Thus, the model with the original groups, which had an equal number of subjects, was used for subsequent analyses.

The results from the model with covariates using the original balanced groups were used for hypothesis testing. A "Tukey studentized range" adjustment (Hsu, 1996) for the p-value was used for the multiple comparisons of the least squared means obtained from the model. An examination of the results reported in Table 13 suggests that after controlling for the covariates, the mean comfort level (13.2) of the internal/external-reference-price group was significantly greater than the mean comfort levels of the other three groups. The mean comfort level of each of the other three groups was not significantly different from each other.

Examination of the results of hypotheses testing indicated that the availability of reference prices had an impact on the subjects' comfort with using the NYOP method to state their WTP for an airline ticket. Specifically, subjects were more comfortable when external reference prices were provided as well as when internal reference prices were generated a priori than when neither reference price was available. In fact, the mean comfort measurement for the internal/external-reference-price group was the only measurement greater than 12, a mean score above which indicated agreement with the statement that s/he feels comfortable using the NYOP method. However, H1 was only partially supported since the subjects' comfort level was not different when there was no reference price than when either an internal or an external reference price was available.

H2: Consumers will believe the probability that their bid will be accepted is higher when reference prices are available than when reference prices are not available. Furthermore, consumers will be more confident in their bids when both internal and external reference prices are available than when only one type of reference price is available.

Prior to testing H2, a model selection task also was performed using the same method as for H1, that is, adding the covariates and re-grouping the subjects. However, none of the individual covariates significantly affected the subjects' confidence in stating their WTP. Also, the group of covariates did not improve the explanatory ability of the model ($F(6, 110)=0.95$, $p=.46$). In addition, the results from the model using the original group manipulation were not significantly different from those in the model using the re-grouped manipulation. Therefore, a one-way ANOVA model with the original balanced groups was used to test H2.

Subjects' confidence in stating their WTP was a ratio-level variable, which was measured by the subjects' expectation of the likelihood of the success of their bid, ranging from zero to 100 with 100 indicating complete confidence. An examination of the results suggested that the mean confidence in the control group was significantly lower than in each of the other three groups (Table 14). In fact, the mean scores obtained from the measurement of subjects' confidence from all of the four groups were fairly low. Among all of the four groups, the highest mean score was about 63 and the lowest mean score was about 40, indicating that subjects were not very confident about the success of their bid overall (Table 14). Nevertheless, the results indicated that the subjects were more confident in their bids when both reference prices or either reference price was available than when no reference price was available. In general, H2 also was partially supported since the mean confidence level in each of the three reference-price groups was not significantly different from each other (Table 14). Thus, the subjects' confidence in the

likelihood of a successful bid was not different when both reference prices were available compared with when one type of reference price was available.

H4: a) When the outcome is negative, that is, their bid was rejected, consumers who used reference prices to bid will feel more regret than those who did not use reference prices. Furthermore, consumers to whom both types of reference prices were available will feel more regret than those to whom only one type of reference price was available.

b) When the outcome is negative, that is, their bid is rejected, consumers will feel more regret when the bid failed by a narrow margin than when it failed by a wide margin. However, a lack of reference prices will mediate the impact of the margin of failure on regret.

The same model selection method employed in the previous tests of hypotheses also was used in the test of H4. The results after re-grouping the subjects were not significantly different from those in the original balanced group manipulation. Also, none of the individual covariates significantly affected subjects' feeling of regret, nor did the group of the covariates improve the explanatory ability of the model ($F(6, 109)=1.22, p=.30$). Therefore, a two-way ANOVA with the original group manipulation was used. The two independent variables were the availability of reference prices and the margin of failure. An interaction term was included in the model to assess whether the impact of the margin of failure on regret was different across all levels of availability of reference prices.

The full model was statistically significant ($F(7, 112)=4.13, p=.0005$). As seen in Table 15, the two main effects of the availability of reference prices and the margin of failure on subjects' regret were statistically significant. However, the interaction term was not statistically significant, indicating that the subjects' regret by margin of failure did not differ across the groups, and vice versa. The mean values by the two main effects are presented in Table 16. For

the main effect of availability of reference prices, the only two group means that were significantly different from each other were the internal/external-reference-price group and the control group. The results showed that the subjects' regret about a negative outcome was, on average, lower in the control group than in the reference-price groups. In fact, the mean score for the control group was less than 16, indicating that a subject felt either neutral or no regret about the negative outcome of their bid. The mean value of regret also was significantly different by the margin of failure. The results suggested that, on average, subjects felt more regret when they found they underbid by \$10 than when they found they underbid by \$100. In fact, on average, subjects did not feel regret about their bid when they found they underbid by \$100 (mean value of 15.63, indicating neutrality or no regret).

The significant main effect of the availability of reference prices, the only significant difference from the group comparisons, partially supported H4a. When the bid was rejected, subjects felt more regret when both internal reference prices were generated a priori and external reference prices were presented than when no reference price was available. The hypothesis was based on the assumption that a lack of reference prices means consumers feel less personal responsibility and control for their decisions and thus they feel less regret about the negative outcome. Thus, the results suggest that subjects who had neither type of reference price were less invested in their decisions. Therefore, the subjects felt less or no regret when no reference price was available compared with when both types of reference prices were available. However, the subjects' regret was not different when no reference price was available than when either an internal or an external reference price but not both were available.

H4b also was partially supported. The significant main effect of the margin of failure of one's bid suggests that when the subjects' bid was rejected, they felt more regret when the bid

failed by a narrow margin than when it failed by a wide margin. However, a lack of reference prices did not mediate the impact of the margin of failure on subjects' regret since the term measuring the interaction of the availability of reference prices and the margin of failure was not significant. That means, for example, that if a subject with access to both types of reference prices felt more regret when s/he underbid by \$10 than when s/he underbid by \$100, s/he still felt more regret when the bid failed by a narrow margin even when no reference price was available.

Experiment 2

The Participants

Statistics describing the participants' age, gender, experience with Internet use and online shopping, and experience with the NYOP method are presented in Table 4. One hundred and twenty undergraduate students participated in the study. Participants who took part in Experiment 1 were not in Experiment 2. The profile of the participants in Experiment 2 was fairly similar to the profile of those in Experiment 1. The mean age of the participants was 22 and just over one-half (55%) of the participants were female. The participants' online activities were almost identical with those in Experiment 1. Online search and shopping also were important online activities for the participants in Experiment 2, and a majority of them had experience with airline ticket purchases (67%). A slightly higher percentage of Experiment 2 participants had previous experience with a NYOP method relative to Experiment 1 (21% and 15%, respectively).

Test of the Constructs

As in Experiment 1, the subjects' comfort with using the NYOP method and their regret about a negative outcome were tested for their unidimensionality and reliability using factor

analysis and correlation analysis. The results of the factor analysis are presented in Tables 5 and 6 and the results of the correlation analysis are presented in Table 7 through Table 10.

The results of the tests of the constructs shared a pattern fairly similar to those in Experiment 1. For the construct of subjects' comfort with using the NYOP method, examination of the results of the factor analysis indicated that the four items formed a unidimensional construct, although the item "I would feel better if I had more information" had a relatively low factor loading score (.49) (Table 5). Also, the results of the correlation analysis indicated that the four items formed a reliable construct. However, as in Experiment 1, removing the item "I would feel better if I had more information" made the construct more reliable (Table 7). Therefore, the item was removed from the construct of comfort in subsequent analyses.

For the construct of subjects' regret about a negative outcome, examination of the results of the factor analysis indicated that the five items formed a unidimensional construct (Table 6). However, the item "I did the best I could" had a fairly low factor loading score (.27). Also, removing the item made the construct more reliable (see Table 9). Therefore, as in Experiment 1, the item was removed from the construct of regret in subsequent analyses.

Participants' Uses of the NYOP Method

Statistics describing the participants' uses of the NYOP method to bid their prices are presented in Table 11. Almost all (93%) of the participants in the internal/external- and internal-reference-price group reported that they had some price information in mind. The mean price in participants' minds was \$273. About one-half (48%) of the participants thought the normal price of the route would be from \$200 to \$300, whereas only 18% of the participants thought the fair price would fall into this range. As in Experiment 1, there was a significant percentage (48%) of participants who said the price they had in mind was a guess. A larger proportion of the

participants in Experiment 2 (47%) than in Experiment 1 (35%) indicated that the price they had in mind was based on experience.

Across Experiment 2, regardless of the manipulation of the reference prices, the average amount the participants bid for a ticket was \$214. As in Experiment 1, the participants were uncertain with their bid (probability of 57.7). Also, less than one-half of the participants (45%) reported comfort scores of above 12; a mean score above 12 indicated agreement with the statement that s/he feels comfortable using the NYOP method. The mean score of comfort with using the NYOP method in Experiment 2 was 12.1, which was greater than the mean comfort score in Experiment 1.

A majority of the participants (69%) reported a regret score equal to or above 16; a mean score above 16 indicated that a participant agreed with the statement that s/he feels regret about the negative outcome. The mean score of regret in Experiment 2 was 16.7.

Hypotheses Testing

Experiment 2 focused on testing H3. However, H1, H2, H4a, and H4b also were tested in the experiment. Similar to Experiment 1, a dependent variable measuring subjects' comfort was created by adding scores obtained from each of the three remaining items in the construct of comfort. Also, a dependent variable measuring subjects' regret about a negative outcome was created by adding scores obtained from each of the four remaining items of the construct of regret. To test H3, a dependent variable, the deviation of subjects' WTP from reference prices, was created by subtracting either an internal or an external reference price from subjects' WTP. The absolute values of the subtraction were used in the analyses. A noticeable difference between the two experiments was that in Experiment 2, an internal reference price generated by subjects played an important role in creating the deviation of subjects' WTP from reference

prices, that is, the dependent variable. Therefore, any subject who answered “No” to the question asking if s/he has a price or a range of price in mind (see Q1 in Appendix B) was moved to groups without internal reference price manipulations in subsequent analyses. As a result, two subjects in the internal/external-reference-price group were moved to the external-reference-price group and two subjects in the internal-reference-price group were moved to the control group.

H1: Consumers will be more comfortable using the NYOP method when external reference prices are provided or internal reference prices are generated a priori compared with using the NYOP method without reference prices.

As in Experiment 1, a model selection task was performed before conducting the test of the hypothesis. Subjects’ age, gender, experience with airline ticket purchases, frequency of Internet use, frequency of online shopping, and experience with the NYOP method were added as covariates to a simple model containing subjects’ comfort as the dependent variable and the availability of reference prices as the independent variable. However, the results of a model comparison suggested that none of the individual covariates significantly affected subjects’ comfort with using the NYOP method. Nor did the group of the covariates improve the explanatory ability of the model ($F(6,110)=1.84, p=.10$). Therefore, a simple one-way ANOVA was employed and a General Linear Model was used to deal with the unbalanced groups after re-grouping the subjects.

An examination of the results reported in Table 17 suggests that the mean comfort with the NYOP method of the internal/external-reference-price group (13.9) was significantly greater than the mean comfort levels of the external-reference-price (12.1) and the control group (10.1). Also, the mean comfort levels of both the internal- and the external-reference-price groups (12.3

and 12.1, respectively) were greater than the mean comfort level of the control group. The results supported H1, indicating that the availability of reference prices had an impact on the subjects' comfort with using the NYOP method to bid their price for an airline ticket. Specifically, the availability of either or both types of reference prices increased subjects' comfort with using the NYOP method. In fact, the mean comfort measurement for the control group was the only measurement lower than 12, a mean score below which indicates that a subject either was neutral or disagreed with the statement that s/he feels comfortable using the NYOP method.

H2: Consumers will believe the probability that their bid will be accepted is higher when reference prices are available than when reference prices are not available. Furthermore, consumers will be more confident in their bids when both internal and external reference prices are available than when only one type of reference price is available.

A model selection task with regard to the impact of the above-mentioned covariates also was performed. The results suggested that none of the individual covariates significantly affected the subjects' confidence in stating their WTP. Also, the group of covariates did not improve the explanatory ability of the model ($F(6,110)=1.02, p=.42$). Therefore, a one-way ANOVA with the unbalanced groups was used to test H2. The results failed to support H2. The mean confidence levels were not significantly different in any of the pair-wise comparisons, indicating that the availability of reference prices had no impact on subjects' confidence in the success of their bid on the airline ticket for this particular route. In fact, the mean confidence levels from all of the four groups were between 50 and 60 (see Table 18).

H3. Considering that both internal and external reference prices potentially are operative at the point of purchase, external reference prices will play a more important role than internal reference prices in consumers' value elicitation in the NYOP format.

Based on the hypothesis, it was expected that the subjects' stated WTP would be closer to the external reference price than to the internal reference price. A dependent variable measuring the deviation of the subjects' WTP from the reference prices was created and the hypothesis was tested in two steps.

First, a two-sample t-test was used for the comparison between the internal-reference-price group and the external-reference-price group. Specifically, the deviations of subjects' WTP from the internal reference price generated and the external reference price provided, respectively, were obtained and compared. The results from the between-subjects (two groups) comparison reported in Table 19 suggested that the deviation of the subjects' WTP from the internal reference price (49.0) was not different from the deviation of the subjects' WTP from the external reference price (55.6). The results failed to support H3. Nevertheless, as discussed in the previous chapter, a limitation of the manipulation in Experiment 2 was that the researcher could not ensure that subjects in the control and external-reference-price groups stated their WTP without any internal reference price in mind even though they were not asked to pre-articulate one. This limitation might make comparison between the internal-reference-price group and the external-reference-price group questionable.

Therefore, the internal/external-reference-price group was used for a within-subject analysis. By comparing the deviation of the WTP from the internal reference price generated and the external reference price provided, the subjects served as their own control. A two-sample t-test also was used for the analysis and the results are presented in Table 19. The results from the within-subject analysis supported H3. The mean deviations were significantly different from each other. Specifically, the mean deviation of the subjects' WTP from the internal reference price (105.6) was much greater than the mean deviation of the subjects' WTP from the external

reference price (40.4) – more than twice as large. The results indicated that the subjects tended to state their WTP closer to the external reference price provided than to the internal reference price they generated.

H4: a) When the outcome is negative, that is, their bid is rejected, consumers who used reference prices to bid will feel more regret than those who did not use reference prices. Furthermore, consumers to whom both types of reference prices were available will feel more regret than those to whom only one type of reference price was available.

b) When the outcome is negative, that is, their bid is rejected, consumers will feel more regret when the bid failed by a narrow margin than when it failed by a wide margin. However, a lack of reference prices will mediate the impact of the margin of failure on regret.

The same model selection method employed in the previous tests of hypotheses also was used in the test of H4. The group of covariates did not improve the explanatory ability of the model ($F(6, 109)=1.03, p=.41$). Therefore, a two-way ANOVA with the unbalanced groups was used. The two independent variables were the availability of reference prices and the margins of failure. An interaction term was included in the model to assess whether there was a difference in the impact of the margin of failure on regret across all levels of availability of reference prices.

The model was statistically significant ($F(7, 112)=5.08, p<.0001$). As seen in Table 20, the main effect of the availability of reference prices was statistically significant at $p < .01$. However, the main effect of the margin of failure and the interaction term were not statistically significant, indicating that the margin of failure had no impact on the subjects' regret about the negative outcome from their bid for an airline ticket.

The mean values by the two main effects are presented in Table 21. For the main effect of availability of reference prices, the mean regret in the internal/external-reference-price group and

the mean regret in the internal-reference-price group were significantly different from the means in the external-reference-price group and the control group. The results showed that the subjects' regret about a negative outcome was, on average, lower in the control group (13.78) and the external-reference-price group (15.66) than in the other two reference-price groups (18.86 and 19.04). In fact, the mean scores for both the control group and the external-reference-price group were less than 16, a mean score below which indicates that a subject felt either neutral or no regret about the negative outcome of their bid.

The mean value of regret was not significantly different when the margin of failure was different. In fact, on average, the subjects felt relatively little regret about the negative outcome regardless of whether they underbid by \$10 or by \$100 (mean values of 17.27 and 16.11, respectively).

The results failed to support H4b although they partially supported H4a. When the bid was rejected, subjects felt less regret when no reference price was available than when either an internal reference price was generated a priori or when both an internal reference price was generated and an external reference price was presented. However, the subjects' regret was not different when no reference price was available than when an external reference price was presented.

Experiment 3

The Participants

Statistics describing the participants' age, gender, experience with Internet use and online shopping, and experience with the NYOP method are presented in Table 4. Sixty undergraduate students participated in the experiment; the participants were not in either Experiment 1 or Experiment 2. The profile of participants in Experiment 3 was similar to that of the participants

in the previous two experiments. The mean age also was 22. Experiment 3 participants were more likely to be male than in the other experiments (57% compared to 45%). The statistics presented in Table 4 revealed a consistent pattern for participants' online activities across the three experiments. Online search and shopping were important online activities for the participants. Experiment 3 participants were more frequent online shoppers than those in the other experiments. The majority (82%) of the participants in Experiment 3 had experience with airline ticket purchases, and over one-fifth of them (22%) had used a NYOP method.

Test of Construct

The subjects' comfort with using the NYOP method and their regret about a negative outcome also were tested for their unidimensionality and reliability using factor analysis and correlation analysis, although these two constructs were not the focus of the analysis for Experiment 3. The results of the factor analysis are presented in Table 22; the results of the correlation analysis are presented in Table 23 through Table 26.

The results of the factor analysis and the reliability analysis were fairly consistent with those from the previous two experiments. For the construct of subjects' comfort with using the NYOP method, examination of the results of the factor analysis indicated that the four items formed two factors and the item "I would feel better if I had more information" stood out as a single factor. Also, the results of the reliability test indicated that removing the above-mentioned item made the construct more reliable (Coefficient alpha with deleted variable=.72) (Table 23). However, examination of the Cronbach's alpha indicated that the reliability of the construct was not high (Raw alpha=.65; Standardized alpha=.66) (Table 23).

For the construct of subjects' regret about a negative outcome, the results of the factor analysis revealed the same pattern as that in Experiment 1. The item "I did the best I could" did

not fit into the construct of regret (Table 22). Also, examination of the results of the reliability test indicated that removing the above-mentioned item made the construct more reliable (Coefficient alpha with deleted variable=.87) (Table 25).

Participants' Uses of the NYOP Method

Statistics describing the participants' uses of the NYOP method to bid their prices are presented in Table 11. The route used in Experiment 3 was Atlanta-Tokyo, which was assumed to be unfamiliar to the participants. There was no manipulation of the internal reference price in the experiment.

Across Experiment 3, regardless of the manipulation of the external reference prices, the average amount the participants bid for a ticket was \$752. On average, the participants were moderately confident with their bids (probability of 66.8). Also, about one-half of the participants (52%) reported comfort scores above 12, a mean score above which indicated agreement with the statement that s/he feels comfortable using the NYOP method. The mean score of comfort level in Experiment 3 was 12.2 and similar to the score in Experiment 2.

Less than one-third of the participants (30%) reported a regret score equal to or above 16, a mean score above which indicated that a participant agreed with the statement that s/he felt regret about the negative outcome. The mean score of regret in Experiment 1 was 13.9.

Hypothesis Testing

Experiment 3 focused on testing H5. The dependent variable was subjects' WTP for the specified airline ticket. The independent variable was a two-level categorical variable, that is, the high versus low external reference prices that were assigned to the two experimental conditions.

H5. The manipulation of external reference prices, such as changing the value of reference prices, will affect consumers' WTP such that introducing higher reference prices will increase the amount of consumers' WTP.

As in the previous two experiments, a model selection task was performed before conducting the test of the hypothesis. Subjects' age, gender, experience with airline ticket purchases, frequency of Internet use and online shopping, and experience with the NYOP method were added as covariates to a simple model comparing subjects' WTP between the two groups. However, the results suggested that the group of covariates did not improve the explanatory ability of the model ($F(6,50)=1.60$, $p=.17$). Therefore, a two sample t-test was employed using the balanced groups.

An examination of the results suggested that the mean WTP of the high-external-reference-price group ($M=\$959$, $SD=143$) was significantly greater than the mean WTP of the low-external-reference-price group ($M=\$545$, $SD=99$) (two-tailed test, $t=13.02$; $p<.0001$). The results supported H5, indicating that introducing higher external reference prices will increase the amount of consumers' WTP.

A two-way ANOVA also was performed to test the effect of reference price manipulation (two levels: high vs. low) and the margin of failure (two levels: large vs. small) on subjects' regret about a negative outcome. However, the results revealed that the model was not statistically significant ($F=1.71$, $p=.18$).

Table 1

Variables and corresponding measurements, hypotheses, and research questions in Experiment 1

Research questions	Hypotheses	Variables	Measurement
Does the availability of reference prices increase consumers' comfort with using the NYOP method and confidence in their WTP elicitation?	H1: Consumers will be more comfortable with using the NYOP method when external reference prices are provided or internal reference prices are generated a priori compared with using the NYOP method without reference prices.	DV: Comfort IV: Reference price (4 groups) Control variables: Frequency of using Internet (Q28 in Appendix A) Frequency of online shopping (Q29) Whether have bought airline tickets (Q30) Whether have used NYOP method (Q33 and Q38) Gender and age (Q25 and Q26)	DV: Subjects' comfort with using the NYOP method was a construct that was measured by their agreement (on a seven-item scale) to the four statements (Q15-18) in Appendix A.
Are consumers more confident with their WTP when reference prices are available than when reference price are not available? Furthermore, are consumers more confident if both internal and external reference prices are available compared with when only one is available?	H2: Consumers will believe the probability that their bid will be accepted is higher when reference prices are available than when reference prices are not available. Furthermore, consumers will be more confident in their bid when both internal and external reference prices are available than when only one type of reference price is available.	DV: Confidence IV: Reference price (4 groups) Control variables: Frequency of using Internet (Q28 in Appendix A) Frequency of online shopping (Q29) Whether have bought airline tickets (Q30) Whether have used NYOP method (Q33 and Q38) Gender and age (Q25 and Q26)	DV: Subjects' estimation of the likelihood of their bid being accepted. It was measured by a ratio-level scale from 0 to 100 with 0 indicating completely unlikely and 100 indicating certainty. (Q19)

Table 1 (continued)

Research questions	Hypotheses	Variables	Measurement
Facing a negative outcome, do consumers feel more regret when reference prices are available than when they are not available?	<p>H4a: When bids are rejected, consumers using reference prices will feel more regret than those who did not. Furthermore, consumers using both types of reference prices will feel more regret than those using only one type.</p> <p>H4b: When the outcome is negative, that is, their bid is rejected, consumers will feel more regret when they fail by a narrow margin than when they fail by a wide margin. However, the impact of the margin of failure on regret will be mediated by a lack of reference prices.</p>	<p>DV: Regret</p> <p>IV1: Reference price (4 groups)</p> <p>IV2: Margin of failure: subjects were either informed that they underbid by \$10 or by \$100.</p> <p>Control variables: Frequency of using Internet (Q28 in Appendix A) Frequency of online shopping (Q29) Whether have bought airline tickets (Q30) Whether have used NYOP method (Q33 and Q38) Gender and age (Q25 and Q26)</p>	<p>DV: Subjects' feeling of regret was a construct that was measured by their responses (on a seven-item scale) to five statements (Q20-24) in Appendix A.</p>

Table 2

Variables and corresponding measurement, hypotheses, and research questions in Experiment 2

Research Questions	Hypotheses	Variables	Measurement
Does the availability of reference prices increase consumers' comfort with using the NYOP method and confidence in their WTP elicitation?	H1: Consumers will be more comfortable with using the NYOP method when external reference prices are provided or internal reference prices are generated a priori compared with using the NYOP method without reference prices. (Difference from Experiment 1: The reference price manipulation was in the format of a single price.)	DV: Comfort IV: Reference price (4 groups) Control variables: Frequency of using Internet (Q28 in Appendix B) Frequency of online shopping (Q29) Whether have bought airline tickets (Q30) Whether have used NYOP method (Q33 and Q38) Gender and age (Q25 and Q26)	DV: Subjects' comfort with using the NYOP method was a construct measured by their agreement (on a seven-item scale) to the four statements (Q15-18) in Appendix B.
Are consumers more confident with their WTP when reference prices are available than when reference price are not available? Furthermore, are consumers more confident if both internal and external reference prices are available compared with when only one is available?	H2: Consumers will believe the probability that their bid will be accepted is higher when reference prices are available than when reference prices are not available. Furthermore, consumers will be more confident in their bids when both internal and external reference prices are available than when only one type of reference price is available. (Different from Experiment 1: The reference price manipulation was in the format of a single price.)	DV: Confidence IV: Reference price (4 groups) Control variables: Frequency of using Internet (Q28 in Appendix B) Frequency of online shopping (Q29) Whether have bought airline tickets (Q30) Whether have used NYOP method (Q33 and Q38) Gender and age (Q25 and Q26)	DV: Subjects' estimation of the likelihood of their bid being accepted. It was measured by a ratio-level scale from 0 to 100 with 0 indicating completely unlikely and 100 indicating certainty. (Q19)

Table 2 (continued)

Research Questions	Hypotheses	Variables	Measurement
<p>When consumers use the NYOP method, does the external reference price play a more important role in their decisions than the internal reference price?</p>	<p>H3: External reference prices will play a more important role than internal reference prices in consumers' value elicitation in the NYOP format.</p>	<p>Between-Subject: H3: DV: Difference between subjects' WTP and either of the reference price values IV: External reference price group vs. internal reference price group</p> <p>Within-Subject: H3: DV: Difference between subjects' WTP and either of the reference price values IV: External reference price and internal reference price in the external/internal reference price group</p>	<p>For both between and within-subject analysis:</p> <p>H3: Difference between WTP and external reference price (i.e., the average price provided)</p> <p>Difference between WTP and internal reference price: (i.e., the average price articulated by the subjects before bidding: Q2)</p>
<p>Facing a negative outcome, do consumers feel more regret when reference prices are available than when they are not available? (To answer the same question which is addressed in Experiment 1)</p>	<p>H4a: When bids are rejected, consumers using a reference price will feel more regret than those who do not. Furthermore, consumers using both types of reference price will feel more regret than those using only one type. H4b: When the outcome is negative, that is, their bid is rejected, consumers will feel more regret when they fail by a narrow margin than when they fail by a wide margin. However, the impact of the margin of failure on regret will be mediated by a lack of reference prices.</p>	<p>DV: Regret</p> <p>IV1: Reference price (4 groups)</p> <p>IV2: Margin of failure: Subjects were either informed that they underbid by \$10 or by \$100.</p> <p>Control variables: Frequency of using Internet (Q28 in Appendix B) Frequency of online shopping (Q29) Whether have bought airline tickets (Q30) Whether have used NYOP method (Q33 and Q38) Gender and age (Q25 and Q26)</p>	<p>DV: Subjects' feeling of regret was a construct that was measured by their responses (on a seven-item scale) to the five statements (Q20-24) in Appendix B.</p>

Table 3

Variables and corresponding measurement, hypotheses, and research questions in Experiment 3

Research Questions	Hypotheses	Variables	Measurement
Does manipulation of reference prices, such as changing the magnitude of external reference prices, affect consumers' WTP?	H5: The manipulation of external reference prices, such as changing the value of reference prices, will affect consumers' WTP in such a way that introducing higher reference prices will increase the amount of consumers' WTP.	DV: Subjects' WTP IV: High vs. low external reference price group Control variables: Frequency of using Internet (Q28 in Appendix C) Frequency of online shopping (Q29) Whether have bought airline tickets (Q30) Whether have used NYOP method (Q33 and Q38) Gender and age (Q25 and Q26)	DV: Continuous variable: subjects' stated WTP in dollars (Q1 in Appendix C)

Table 4

Descriptive statistics about the participants in the experiments

Characteristics and Activities	Experiment 1 (N=120)		Experiment 2 (N=120)		Experiment 3 (N=60)	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Gender						
Male	54	45	55	45	34	57
Female	66	55	65	55	26	43
Age						
Mean	22		22		22	
Std. Deviation	4.14		2.23		2.46	
Internet activities						
Email	119	99	120	100	58	97
Reading news	97	81	87	73	45	75
Homework	116	97	119	99	57	95
Gathering information	88	73	103	86	46	77
Job searching	65	54	57	48	18	30
Work/business	40	33	26	22	20	33
Communication (chat room)	51	43	59	49	23	38
Entertainment	64	53	65	54	34	57
Surfing	75	63	72	60	42	70
Research	63	53	55	46	31	52
Travel information	79	66	83	69	42	70
Product information	91	76	95	79	42	70
Buying	99	83	95	79	42	70
Auctions	42	35	52	43	19	32
Frequency of Internet use						
Several times a day	77	64	74	62	40	67
About once a day	29	24	34	28	11	18
Less often	14	12	12	10	9	15
		100%		100%		100%
Frequency of online shopping						
Every day	4	3	2	2	5	8
Several times a week	22	18	22	18	19	32
Several times a month	48	40	32	27	25	42
No more than once a month	35	30	56	47	9	15
No more than once a year	11	9	8	6	2	3
		100%		100%		100%

Table 4 (continued)

Characteristics and Activities	Experiment 1 (N=120)		Experiment 2 (N=120)		Experiment 3 (N=60)	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Experience with airline ticket purchases						
Yes	74	62	80	67	49	82
No	46	38	40	33	11	18
Frequency of airline ticket purchases						
Several times a month	1	1	0	0	3	5
Several times a year	26	35	31	39	19	32
About once a year	27	37	28	35	14	23
Less often	20	27	21	26	24	40
		100%		100%		100%
How purchased airline tickets						
From a travel agent's website	12	16	8	10	8	13
On the phone from a travel agent	11	15	7	9	8	13
From Priceline.com or other NYOP sites	12	16	23	29	12	20
In person	11	15	7	9	5	8
On the phone from an airline	12	16	15	19	10	17
From an airline's website	47	64	50	63	33	55
Experience with using NYOP method						
Yes	18	15	25	21	13	22
No	102	85	95	79	47	78
		100%		100%		100%

Table 5

Factors related to subjects' comfort with using the NYOP method

Factor	Experiment 1			Experiment 2		
	Factor loading	Percent of variability	Eigen value	Factor loading	Percent of variability	Eigen value
Subjects' comfort with using the NYOP method		59	2.35		53	2.14
I feel comfortable using this method to buy this ticket.	.82			.82		
It was hard for me to name the price for this ticket. ^r	.80			.83		
I would feel better if I had been given a price I could accept or reject instead of bidding. ^r	.79			.74		
I would feel better if I had more information. ^r	.64			.49		

^r: The items were reverse coded.

Table 6

Factors related to subjects' regret about a negative outcome

Item	Experiment 1		Experiment 2
	Factor 1	Factor 2	Factor 1
I would have been happier if I had bid differently.	.89	-.08	.87
If I could do it over again, I would change my bid.	.88	.05	.87
I should have bid differently.	.87	-.09	.81
I regret my decision to bid the price I bid.	.84	.09	.81
I did the best I could. ^r	.03	.99	.27
Eigenvalue	3.03	1.02	2.89
% of variance explained	61	20	58

^r: The item was reverse coded.

Table 7

Reliability test of construct of comfort: Item-total correlation

Items	Experiment 1		Experiment 2	
	Correlation with total	Cronbach's Alpha with deleted item	Correlation with total	Cronbach's Alpha with deleted item
I feel comfortable using this method to buy this ticket.	.63	.67	.58	.57
It was hard for me to name the price for this ticket. ^r	.59	.69	.60	.55
I would feel better if I had been given a price I could accept or reject instead of bidding. ^r	.59	.69	.48	.63
I would feel better if I had more information. ^r	.44	.77	.28	.74
Cronbach's alpha				
Raw variables	.76		.70	
Standardized variables	.76		.70	

^r: The items were reverse coded.

Table 8

Reliability test of construct of comfort: Inter-item correlation

Items	Experiment 1				Experiment 2			
	1	2	3	4	1	2	3	4
1. I feel comfortable using this method to buy this ticket.	--	.61***	.53***	.33***	--	.58***	.46***	.22*
2. It was hard for me to name the price for this ticket. ^r		--	.45***	.34***		--	.45***	.29**
3. I would feel better if I had been given a price I could accept or reject instead of bidding. ^r			--	.42***			--	.18*
4. I would feel better if I had more information. ^r				--				--

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 9

Reliability test of construct of regret: Item-total correlation

Items	Experiment 1		Experiment 2	
	Correlation with total	Cronbach's Alpha with deleted item	Correlation with total	Cronbach's Alpha with deleted item
I would have been happier if I had bid differently.	.73	.71	.72	.72
If I could do it over again, I would change my bid.	.76	.69	.73	.72
I should have bid differently.	.72	.71	.66	.74
I regret my decision to bid the price I bid.	.71	.72	.66	.74
I did the best I could. ^r	.02	.89	.18	.86
Cronbach's alpha				
Raw variables	.79		.80	
Standardized variables	.78		.79	

^r: The items were reversely coded.

Table 10

Reliability test of construct of regret: Inter-item correlation

Items	Experiment 1					Experiment 2				
	1	2	3	4	5	1	2	3	4	5
1. I would have been happier if I had bid differently.	--	.71***	.68***	.69***	-.04	--	.73***	.59***	.60***	.12
2. If I could do it over again, I would change my bid.	--		.73***	.61***	.07	--		.60***	.60***	.13
3. I should have bid differently.			--	.63***	-.04			--	.55***	.18*
4. I regret my decision to bid the price I bid.				--	.08				--	.17
5. I did the best I could. ^r					--					--

* $p < .05$ *** $p < .001$.

Table 11
 Descriptive statistics about participants' uses of the NYOP method in the experiments

Variables	Experiment 1		Experiment 2		Experiment 3	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Have price in mind						
Yes	48	80	56	93		
No	12	20	4	7		
Price provided						
Mean			273			
Std. Deviation			140			
Sources of internal reference price						
Experience	21	35	28	47		
Knowledge	28	47	28	47		
Guess	32	53	27	46		
The normal price in their opinion						
About \$100 (>\$100 in Exp. 2)	12	20	1	2		
\$100-200 (\$100-150)	15	25	7	12		
\$200-400 (\$150-200)	27	45	12	20		
\$400-800 (\$200-300)	5	8	29	48		
Over \$800 (Over \$300)	1	2	11	18		
The fair price in their opinion						
About \$100 (>\$100 in Exp. 2)	21	35	5	8		
\$100-200 (\$100-150)	25	42	22	37		
\$200-400 (\$150-200)	9	15	21	35		
\$400-800 (\$200-300)	4	6	11	18		
Over \$800 (Over \$300)	1	2	1	2		
Participants' bids						
Median	250		197		725	
Mean	274		214		752	
Std. Deviation	140		124		242	
Confidence with the bid						
Mean	55.4		57.7		66.8	
Std. Deviation	21.3		20.3		16.0	
Comfort score distribution						
3-9	48	40	21	18	12	20
10-12	34	28	45	37	17	28
13-21	38	32	54	45	31	52
Mean	10.9		12.1		12.2	
Std. Deviation	3.5		2.9		3.1	
Regret score distribution						
4-12	22	18	20	17	23	38
13-16	31	26	17	14	19	32
16-26	67	56	83	69	18	30
Mean	17.0		16.7		13.9	
Std. Deviation	4.9		4.8		5.8	

Table 12

Model selection: Simple model vs. covariates model and original group manipulation vs. re-grouping: Experiment 1

	Original group manipulation		Re-grouping	
	Simple model	Model with covariates	Simple model	Model with covariates
Groups and covariates	Parameter Estimates	Parameter Estimates	Parameter Estimates	Parameter Estimates
Intercept	9.87***	6.46*	9.79***	6.24***
Internal/external reference price	3.33***	3.05***	3.59***	3.36***
Internal reference price	0.03	-0.37	0.21	-0.19
External reference price	0.77	0.93	1.34	1.62
Frequency of Internet use	--	-0.07	--	-0.01
Frequency of online shopping	--	-0.33	--	-0.35
Purchase airline tickets (yes=1, no=0)	--	0.15	--	0.02
Used NYOP methods (yes=1, no=0)	--	2.71*	--	2.52*
Age	--	0.16*	--	0.16*
Gender (male=1, female=0)	--	1.9**	--	1.8**
F-value	7.04***	5.11***	5.99***	4.44***
F-test for model restriction		3.66**		3.31**

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 13

Comfort with using the NYOP method by availability of reference prices: Means from original groups and the alternative groups: Experiment 1

Group	Comfort with using the NYOP method					
	Original group			Re-grouped		
	Least Squared Mean	<u>SD</u>	<u>n</u>	Least Squared Mean	<u>SD</u>	<u>n</u>
Internal/External reference price	13.2 _a	2.12	30	13.2 _a	2.16	21
Internal reference price	9.6 _b	3.79	30	9.6 _b	3.98	27
External reference price	10.9 _b	3.55	30	11.4 _b	3.37	39
No reference prices (control)	9.9 _b	3.28	30	9.8 _b	3.14	33

Note. Comfort was the sum of three items from the construct. Means in the same column that do not share subscripts differ at $p < .05$ in the Tukey honestly significant difference comparison.

Table 14

Subjects' confidence in stating their WTP by availability of reference prices: Experiment 1

Group	Confidence in success		
	<u>M</u>	<u>SD</u>	<u>n</u>
Internal/External reference price	59.7 _a	19.93	30
Internal reference price	63.3 _a	22.78	30
External reference price	58.0 _a	20.47	30
No reference prices (control)	40.6 _b	14.23	30

Note. Means in the same column that do not share subscripts differ at $p < .05$ in the Tukey honestly significant difference comparison.

Table 15

ANOVA for subjects' regret by the availability of reference prices and margins of failure:

Experiment 1

Source	<u>df</u>	<u>F</u>
Availability of reference prices (R)	3	4.92**
Margin of failure (M)	1	10.45**
R x M	3	1.22
Error	112	(20.66)

Note. Value enclosed in parentheses represents mean square error. ** $p < .01$

Table 16

Regret over negative outcome by availability of reference prices and by margin of failure:

Experiment 1

Group	Regret over the negative outcome		
	<u>M</u>	<u>SD</u>	<u>n</u>
Internal/External reference price	19.27 _a	4.16	30
Internal reference price	17.07 _{ab}	4.68	30
External reference price	16.80 _{ab}	5.80	30
No reference prices (control)	14.77 _b	4.12	30
Margin of failure			
Underbid by \$10	18.31 _a	4.78	60
Underbid by \$100	15.63 _b	4.77	60

Note. Value of regret was the sum of four items in the construct. Means in the same column that do not share subscripts differ at $p < .05$ in the Tukey honestly significant difference comparison.

Table 17

Comfort with using the NYOP method by availability of reference prices: Experiment 2

Group	Comfort with using the NYOP method		
	<u>M</u>	<u>SD</u>	<u>n</u>
Internal/External reference price	13.9 _a	2.16	28
Internal reference price	12.3 _{ab}	2.84	28
External reference price	12.1 _b	2.66	32
No reference prices (control)	10.1 _c	2.69	32

Note. Comfort was the sum of three items from the construct. Means in the same column that do not share subscripts differ at $p < .05$ in the Tukey honestly significant difference comparison.

Table 18

Subjects' confidence in stating their WTP by availability of reference prices: Experiment 2

Group	Confidence in success		
	<u>M</u>	<u>SD</u>	<u>n</u>
Internal/External reference price	60.6 _a	18.80	28
Internal reference price	58.9 _a	19.81	28
External reference price	59.4 _a	19.77	32
No reference prices (control)	52.3 _a	22.29	32

Note. Means in the same column that do not share subscripts differ at $p < .05$ in the Tukey honestly significant difference comparison.

Table 19

The deviation of subjects' stated WTP values from the reference prices

Variable	<u>M</u>	<u>SD</u>	<u>n</u>
Between subjects			
Group: Internal reference price	49.0 _a	62.5	28
Deviation of WTP from internal reference price			
Group: External reference price	55.6 _a	92.5	32
Deviation of WTP from external reference price			
Within subjects			
(Within internal/external reference price group)			
Deviation of WTP from internal reference price	105.6 _a	86.7	28
Deviation of WTP from external reference price	40.4 _b	29.2	28

Note. Absolute values between subjects' WTP and reference prices were used in the analysis.

Means in the same column that do not share subscripts differ at $p < .05$.

Table 20

ANOVA for subjects' regret by the availability of reference prices and margins of failure:

Experiment 2

Source	<u>df</u>	<u>F</u>
Availability of reference prices (R)	3	10.28**
Margin of fail (M)	1	1.81
R x M	3	0.88
Error	112	(19.15)

Note. Value enclosed in parentheses represents mean square error. ** $p < .01$

Table 21

Regret about a negative outcome by availability of reference prices and by margin of failure:

Experiment 2

Group	Regret over the negative outcome		
	<u>M</u>	<u>SD</u>	<u>n</u>
Internal/External reference price	19.04 _a	4.19	28
Internal reference price	18.86 _a	3.81	28
External reference price	15.66 _b	4.32	32
No reference prices (control)	13.78 _b	5.05	32
Margin of failure			
Underbid by \$10	17.27 _a	4.24	60
Underbid by \$100	16.11 _a	5.41	60

Note. Value of regret was the sum of four items in the construct. Means in the same column that do not share subscripts differ at $p < .05$ in the Tukey honestly significant difference comparison.

Table 22

Factors related to subjects' comfort with using the NYOP method and regret about a negative outcome in Experiment 3

Item	Experiment 3	
	Factor 1	Factor 2
Subjects' comfort with using the NYOP method		
I feel comfortable using this method to buy this ticket.	.76	-.47
It was hard for me to name the price for this ticket. ^r	.74	.33
I would feel better if I had been given a price I could accept or reject instead of bidding. ^r	.85	-.27
I would feel better if I had more information. ^r	.44	.80
Eigenvalue	2.03	1.05
% of variance explained	51	26
Subjects' regret about the negative outcome		
I would have been happier if I had bid differently.	.86	-.20
If I could do it over again, I would change my bid.	.93	-.06
I should have bid differently.	.78	-.08
I regret my decision to bid the price I bid.	.84	.19
I did the best I could. ^r	.14	.98
Eigenvalue	2.93	1.04
% of variance explained	59	21

^r : The items were reverse coded.

Table 23

Reliability test of construct of comfort in Experiment 3: Item-total correlation

Items	Experiment 3	
	Correlation with total	Cronbach's Alpha with deleted item
I feel comfortable using this method to buy this ticket.	.43	.58
It was hard for me to name the price for this ticket. ^r	.50	.53
I would feel better if I had been given a price I could accept or reject instead of bidding. ^r	.59	.47
I would feel better if I had more information. ^r	.23	.72
Cronbach's alpha		
Raw variables	.65	
Standardized variables	.66	

^r: The items were reverse coded.

Table 24

Reliability test of construct of comfort in Experiment 3: Inter-item correlation

Items	Experiment 3			
	1	2	3	4
1. I feel comfortable using this method to buy this ticket.	--	.31*	.63***	.06
2. It was hard for me to name the price for this ticket. ^r		--	.44***	.35**
3. I would feel better if I had been given a price I could accept or reject instead of bidding. ^r			--	.17
4. I would feel better if I had more information. ^r				--

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 25

Reliability test of construct of regret in Experiment 3: Item-total correlation

Items	Experiment 3	
	Correlation with total	Cronbach's Alpha with deleted item
I would have been happier if I had bid differently.	.68	.72
If I could do it over again, I would change my bid.	.81	.67
I should have bid differently.	.62	.74
I regret my decision to bid the price I bid.	.73	.72
I did the best I could. ^r	.08	.87
Cronbach's alpha		
Raw variables	.79	
Standardized variables	.78	

^r: The items were reversely coded.

Table 26

Reliability test of construct of regret in Experiment 3: Inter-item correlation

Items	Experiment 3				
	1	2	3	4	5
1. I would have been happier if I had bid differently.	--	.75***	.56***	.62***	-.03
2. If I could do it over again, I would change my bid.		--	.65***	.74***	.06
3. I should have bid differently.			--	.49***	.06
4. I regret my decision to bid the price I bid.				--	.22
5. I did the best I could. ^r					--

* $p < .05$; *** $p < .001$.

CHAPTER 5

SUMMARY, DISCUSSION, AND IMPLICATIONS

The major findings of the study are summarized in this chapter. The significance of the results regarding our understanding of consumers' WTP and emotions with respect to availability of reference prices also is discussed. Contributions to the literature and implications for consumer research are discussed. Finally, limitations of the study are presented, followed by a discussion of potential future research efforts.

Summary of Findings

The purpose of this research was to provide a better understanding of consumers' WTP and emotions when using a NYOP method when reference prices were and were not available. The impacts of reference prices on consumers' value elicitation, their comfort with using the NYOP method, and their regret about a negative outcome were investigated. As stated in the previous chapters, a Mental Accounting Model and the Decision Justification Theory were employed as the theoretical frameworks. Five specific research questions and five hypotheses were tested in three experiments. The constructs of consumers' comfort with using the NYOP method and their regret about a negative outcome were created and tested. Various statistical analyses revealed convincing evidence of the effect of reference prices on consumers' WTP and their emotions when using the NYOP method.

From the results, the following conclusions can be drawn regarding the effect of reference prices on consumers' WTP when they use the NYOP method:

- Consumers are more confident with their WTP, that is, they believe the probability that their bid will be accepted is higher, when reference prices are available than when reference prices are not available.
- When using the online NYOP method, consumers rely more on external reference prices than on internal reference prices.
- Changing the value of external reference prices affects consumers' WTP such that introducing higher reference prices increases the amount of consumers' WTP.

With regard to consumers' emotions, consumers' comfort with using the NYOP method and regret about a negative outcome were significantly correlated with the availability of reference prices. Specifically:

- Consumers feel more comfortable with using the NYOP method when reference prices are available than when reference prices are not available.
- When the outcome is negative, consumers feel more regret when reference prices are available than when they are not.
- When the outcome is negative, consumers feel more regret when their bid fails by a narrow margin than when it fails by a wide margin.

In addition, correlation analyses between the measures of regret, comfort, and confidence were performed in Experiments 1 and 2 to examine a relationship not directly addressed in the research questions and hypotheses. The correlation analyses revealed that subjects' comfort with using the NYOP method was positively correlated with their feeling of regret when they faced a negative outcome (correlation coefficient = 0.2, $p=.04$ in Experiment 1 but not significant in Experiment 2). In other words, subjects who were more comfortable with the NYOP method experienced greater regret when the outcome was negative. The analyses failed to reveal a

significant correlation between subjects' confidence and their feeling of regret when they faced a negative outcome (correlation coefficient=0.1, $p=.3$ in Experiment 1; correlation coefficient=0.1, $p=.2$ in Experiment 2). However, the directions of the correlation between subjects' confidence and regret in both experiments were positive and the results provide a promising research approach for future study.

If consumers' confidence in their WTP can be defined as in a cognitive domain and consumers' comfort with using the NYOP method and regret about a negative outcome can be defined as in an affective domain, the effect of reference prices on consumers' affective and cognitive domains in their purchase decisions using the NYOP method can be summarized in Figure 6:

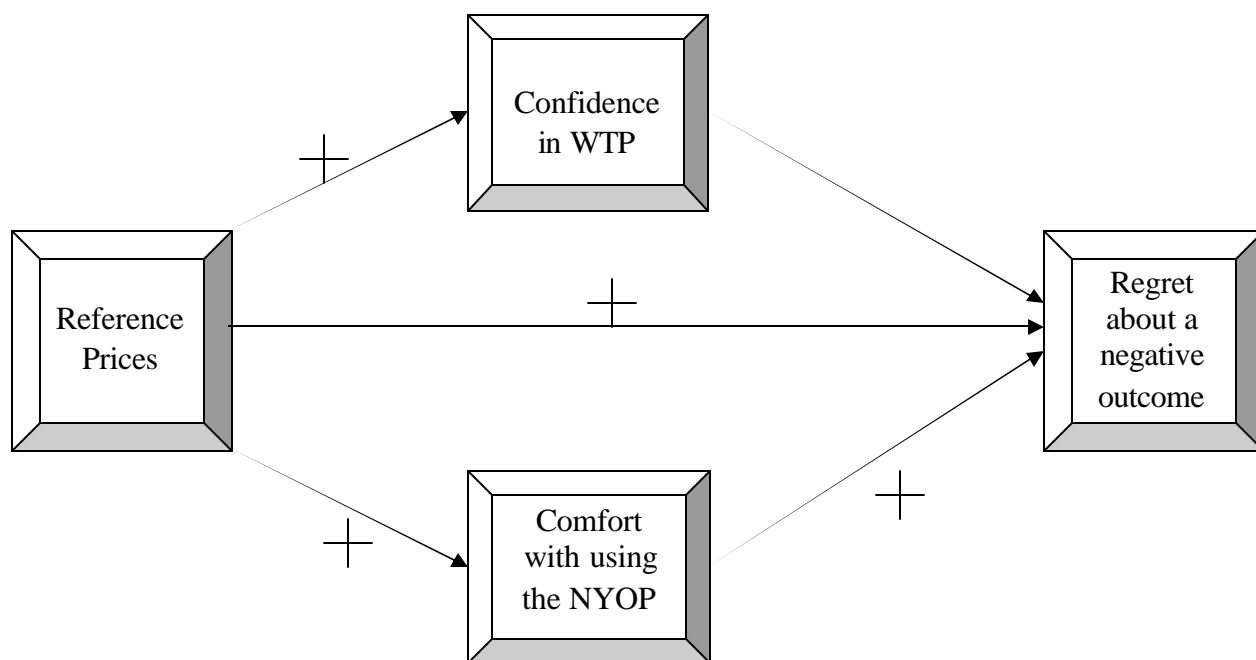


Figure 6. Summary of research findings with regard to effect of reference prices on consumers' confidence, comfort, and regret.

Note: “+” means positive relationship. When applied to the categorical variable, i.e., the availability of reference prices, it means that a higher value of the dependent measures was associated with the availability of reference prices compared to the absence of reference prices.

Discussion of the Research Results

Two objectives guided the research. The following is a discussion of the findings relative to each of the objectives.

The first objective was to investigate consumers’ value elicitation through an online NYOP channel with a focus on the impact of reference prices on consumers’ WTP. The research findings reported here were consistent with the previous evidence that reference prices have a consistent and significant impact on consumers’ buying decisions (Kalyanaram & Winer, 1995). The current study also demonstrates that the reference-price effect is a viable empirical framework to use to investigate consumers’ WTP. Clear evidence is provided that reference price information is incorporated into consumers’ value elicitation process and therefore that it influences their WTP.

This phenomenon is consistent with the Adaptation Level Theory (Helson, 1964) and the Mental Accounting Model (Thaler, 1985). According to Adaptation Level Theory, the past and present context of experience defines an adaptation level relative to which new stimuli are perceived and compared. To simply illustrate this: if a person repeatedly purchases gasoline at \$2.39 per gallon, s/he then becomes accustomed to this price, and the adaptation level becomes \$2.39. Any new price for gasoline will be compared to this level. Thaler’s (1985) Mental Accounting Model was based on the notion that there exist natural reference points in consumer decision making. The reference price therefore was introduced explicitly into a consumer value elicitation model.

Notice that the two theoretical frameworks used as the conceptual basis here only focus on one type of reference price—internal reference prices. Do consumers have multiple reference prices? This question was addressed by previous researchers most of whom incorporated either internal reference prices (e.g., Chandrashekar & Jagpal, 1995) or external reference prices (e.g., Grewal et al., 1998) but not both. For researchers who examined the impact of both internal and external reference prices (e.g., Mayhew & Winer, 1992), a limitation of their results was that it was difficult to distinguish the effect of each specific type of reference prices on consumers' value elicitation of goods or services.

Unlike the earlier studies, the current study attempted to clearly define and distinguish the effects of internal and external reference prices. Also, by allowing subjects to state their value elicitation in an open-ended format, the measurement of their WTP was compatible with the measurement of the reference prices. Thus, the effect of a specific reference price could be examined explicitly by comparing subjects' WTP with each type of reference price. A within-subject analysis in Experiment 2 revealed that an external reference price had a greater influence than an internal reference price on the subjects' WTP. Also, the anchor effect of providing external reference prices was delineated in a clear and parsimonious way in Experiment 3 by comparing different levels of external reference prices with subjects' stated WTP.

Researchers have found a significant impact of reference prices on consumer demand, whether the dependent variable was consumer choice or another manifestation of demand. The most commonly used dependent measures in reference-price research have been brand choice (Lattin & Bucklin, 1989; Rajendran & Tellis, 1994; Winer, 1986), purchase probability (Mayhew & Winer, 1992), purchase intention (Burman & Biswas, 2004; Shirai, 2003), and quality perception (Grewal et al., 1998). Few researchers have employed an approach that combines

various dependent measures into a single study, and no one has studied the impact of reference prices on consumers' emotions related to a purchase.

The current study expanded the application of the impact of reference prices to a broader domain with regard to consumer demand. First, the results of the current study suggest that reference prices significantly influence consumers' WTP, which represents a fundamental economic measurement of consumer demand. Second, the current study investigated a cognitive and an affective domain of consumer purchase decision making. The results indicated that the availability of reference prices also has an impact on consumers' confidence in their value elicitation (cognitive domain) and consumers' comfort with using a specific buying method as well as their regret about a negative outcome (affective domain). Therefore, the study provided an approach by which the impact of reference prices can be examined in a broader framework of consumer demand involving economic as well as non-economic factors.

The current study also contributes to the reference-price literature in terms of the methodology used. By using an existing pricing strategy in the marketplace, the online NYOP method, the study aimed to find an approach that may provide a realistic way to study consumers' value elicitation. Also, employment of the online NYOP method may provide an approach to address the methodological dilemma in the study of reference prices. As noted earlier, previous studies using aggregate scanner data were plagued by high external validity of findings but questionable definition and measurement of reference prices, whereas studies using experimental approaches had high internal validity but low external validity of the findings.

Although consumers' WTP is the ultimate determinant of their purchase decisions, researchers have found that consumers often prefer price selection that offers less flexibility than expressing their WTP in an open-ended format (Chernev, 2003). The current study incorporated

the concept of reference prices in the subjects' assigned task to state their WTP. The rationale behind this approach was that the unavailability of relevant information such as reference prices may lead to limited use of the open-ended method of WTP by consumers. By presenting reference prices to consumers, the current study showed that consumers feel more comfortable with using the NYOP method and are more confident with their WTP when reference prices are available than when they are not. Furthermore, the results of the current study suggest that incorporating both internal and external reference prices increases consumers' comfort with using the method and confidence in the outcome.

The significant impact of reference prices on consumer decision making may have negative effects for consumers if the availability of reference price information is limited. Consumers may be inclined to depend on prices provided by sellers instead of their own value elicitation. In fact, in Experiment 1, over 75% of the subjects in the control group would have preferred to have been given a price to accept or reject instead of bidding. In contrast, less than one-half of the subjects (49%) in the external/internal-reference-price group said they would have preferred a stated price over the NYOP method. The results of Experiment 2 showed a similar pattern: 80% in the control group versus 30% in the external/internal-reference-price group would have preferred being given a price over the NYOP method. Therefore, the advantages of the flexibility of using the NYOP method are reduced by the lack of reference price information.

Second, the impact of reference prices may lead to poor buying decisions. When consumers purchase unfamiliar goods or services, they often do not have clear reference price information in mind. External reference prices may play such a huge role that consumers' value elicitation largely depend on the reference prices. In Experiment 3, the high external reference

price provided by the researcher (\$1150) for an Atlanta-Tokyo round-trip ticket was almost twice the low external reference price provided by the researcher (\$620). The subjects in the high-reference-price group were willing to pay almost twice as much as the subjects in the low-reference-price group (\$959 and \$545, respectively). Even when consumers have internal reference prices in mind, external reference prices still play a critical role in their value elicitation. The results of the within-subject analysis in Experiment 2 showed that the subjects' WTP was closer to the external reference prices provided by the researcher than to their own internal reference prices. Therefore, if external reference prices are inaccurate or intentionally misleading, consumers may not make good decisions if they rely on them.

The second objective of the current study was to examine consumers' emotions related to their decisions when they use the NYOP method. The current study contributes to the literature in that the researcher investigated consumers' feelings during the decision process as well as their feelings about decision outcomes. The results of the current study suggest that consumers' feelings about the decision process are significantly correlated with their feelings about the outcomes of the decision. Specifically, the more comfortable they feel about the decision making process, the greater the regret they will feel about a negative outcome. In addition, the multi-item constructs of consumers' comfort and regret were fairly unidimensional and reliable across the experiments, and may provide a reference for the further development of the constructs and their measurement in future research.

The major findings of the current study focused on the relationship between reference price information and subjects' feelings of comfort with the NYOP method and regret about negative outcomes from using the method. When reference prices were available, the subjects were more comfortable with using the NYOP method. Specifically, they felt that it was fairly

easy for them to name the price, and were less likely to say they would have preferred a stated price over bidding. Although the current study failed to reveal a significant correlation between subjects' comfort with using the method and their confidence with their WTP, the framework, which included economic factors, cognitive factors, and affective factors, provides a potential approach for future research.

The Decision Justification Theory served as a theoretical framework for the analyses of the reference-price effect on consumers' regret about a negative outcome. Based on the theory and the results, Figure 7 provides a summarized model for the application of the theory in this study, although the relationship between some elements (e.g., availability of reference prices and personal responsibility) were not measured directly in the current study and deserve future exploration.

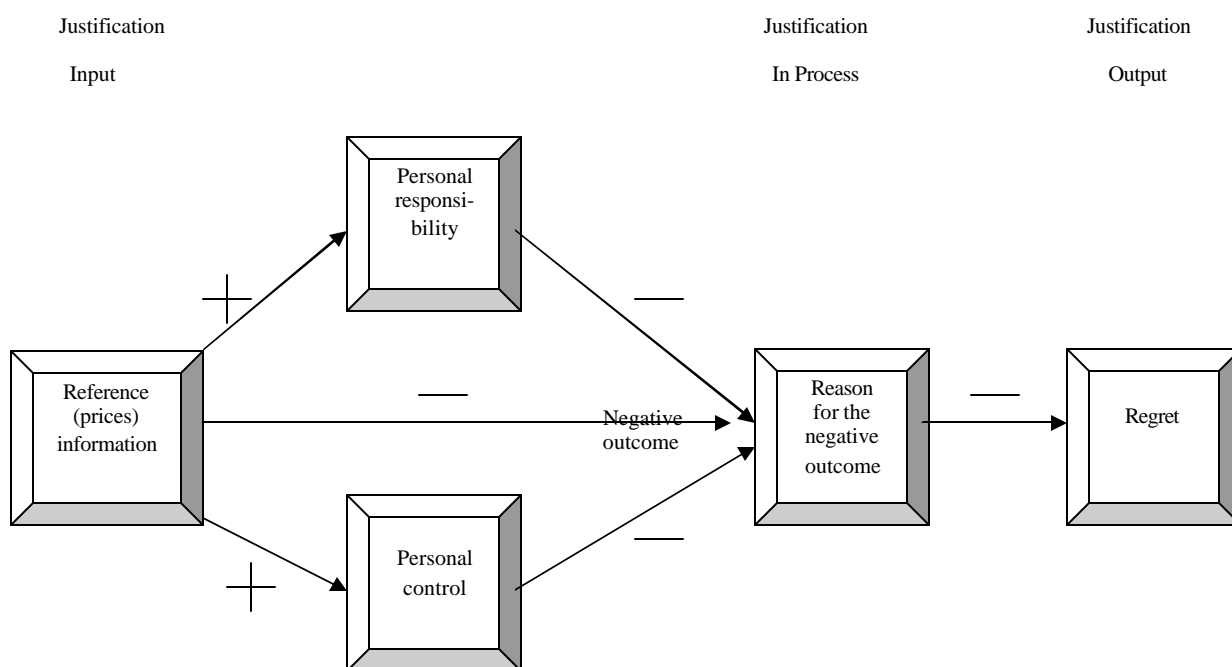


Figure 7. Model of DJT with regard to the availability of reference (prices) information.

Note: “+” means positive relationship and “-” means negative relationship. When applied to a categorical variable, i.e., the availability of reference prices, it means that the higher values in

other measures such as regret were associated with the availability of reference prices compared to the absence of reference prices.

Figure 7 provides a proposed model reflecting the rationale behind the Decision Justification Theory. The Justification Input category captures the arguments (e.g., availability or absence of reference price information) consumers need to justify decision outcomes. The Justification In Process category describes how a consumer provides reasons for a result from a decision. The current study only hypothesized about justification inputs processes and thus the proposed model is an assumption to be explored in future research. The Justification Output category describes consumers' responses to decision outcomes. In the current study, justification output was assessed by the regret subjects felt when they did not have reference prices. Also, the current study showed that availability of input information (reference prices) affected subjects' feelings during the decision process, which were correlated with their regret about a negative outcome.

The proposed model may provide an approach for further development of the Decision Justification Theory. Researchers have given little attention to the sorts of arguments that make good justifications for outcomes from consumers' decisions. The results of the current study suggested that less reference price information is likely an example of a good explanation or justification for a negative decision outcome. However, the current study only suggested that having a good justification might lead to less regret about a decision's negative outcome. It did not suggest a good strategy for consumers to use to avoid regret. Even consumers who make a good decision may experience regret. While having less input information may mean consumers have less regret about a negative outcome, it also may mean they may be less involved in the

decision and the outcome may be more likely to be negative. Thus, understanding more about the interaction of decision justification and regret is important.

It is unclear from the existing literature how individuals justify their decisions and what justification inputs individuals use to justify their decisions. Finding clearer justification inputs for individuals to justify their decisions may be the focus for future studies of conceptualization of the Decision Justification Theory. Qualitative studies aimed at exploring people's thoughts and opinions about their regrets may be especially beneficial. The results of the current study indicated that a certain kind of limitation involved in individuals' decision making such as the lack of reference prices might serve as a justification input. Other justification inputs may take form as the quantity and/or quality of individuals' efforts in making decisions.

The current study has implications for consumers as well as for marketers. As consumers make purchase decisions, reference prices serve as an informational tool to help them to transfer their preferences or value elicitation into monetary terms. Across the three experiments in the current study, the subjects' WTP was influenced by internal and/or external reference prices. The results suggest that incorporating reference prices may enhance consumers' feelings of comfort with the buying process and their confidence with their purchase decisions. Even having a general idea about the prices of certain products may help consumers with their value elicitation as well as their comfort and confidence with the purchase.

Marketers may play an important role by providing specific and reliable reference prices to consumers to reduce their search efforts and enhance their buying experiences. Specifically, for an online bidding site, it is important that consumers feel comfortable with the price-generation method and feel confident with their bid. Providing relevant information may be a key strategy for marketers. Other strategies may include providing an easy interface for

consumers to find relevant information or designing software to facilitate consumers' search for relevant information.

Marketers also must be wary of the fact that incorporating relevant information into decision making may lead to feelings of regret if the decision outcome is negative. Although the current study did not examine the impact of regret on consumers' future purchase behavior, the chances that regret would have negative effects on the relationship between consumers and online vendors would be high. Therefore, it is important for marketers to understand how consumers justify their decision results. The current study does not suggest providing less information about reference prices as a good strategy, even though the results indicated that subjects felt less regret about a negative decision outcome when no reference prices were available. Finding other ways to help consumers justify a negative decision result and alleviate their regret is therefore as important as providing relevant information to facilitate consumers' decision processes.

Limitations of the Study and Future Directions

The current study has several limitations. One limitation is that a convenience sample of undergraduate students was used in the experiments, reducing the generalizability of the results. Also, some would argue that a student sample would respond to reference prices differently than would a sample of consumers drawn from the general population with respect to value elicitation and emotions associated with decision making. However, the results of the current study revealed that the students were fairly familiar with the online environment and that online searching for information and shopping were important activities for them. Also, about 20 percent of the subjects had used the NYOP method. Therefore, the results of the current study are

valid with respect to the application and implications for online shoppers and users of the NYOP method.

Another major limitation is related to the manipulation of reference prices. In Experiments 1 and 2, subjects in the control and external-reference-price group were treated as if they did not have any internal reference price in mind. The researcher could not know they did not have internal reference prices in mind or that they did not incorporate internal reference prices into their decision making. In fact, for the Atlanta-Washington, D.C. route in Experiment 2, the answers to the question “Do you have a price or a range of prices in mind” indicated that most of the subjects had some ideas about a reference price. Even for the supposedly unfamiliar Atlanta-Boise route in Experiment 1, about 80% of the subjects who answered the above-mentioned question had some idea about the price, although most said it was a guess. Therefore, it would be reasonable to assume that the subjects who did not answer this question, that is, the subjects in the control and external-reference-price group, also might have some ideas about the price.

Despite the limitations, the results from Experiment 1 showed there were differences in the subjects’ comfort between the internal/external-reference-price group and the external-reference-price group. The results indicate the internal-reference-price manipulation did have an effect; that is, asking subjects questions regarding internal reference prices did make a difference. Similarly, effects of the internal-reference-price manipulation also can be found in the subjects’ confidence with their WTP in Experiment 1 (see Table 13) and the subjects’ comfort with the NYOP method (see Table 16).

Although research has shown that internal reference prices have a significant effect on consumer decision making, one major issue needs to be addressed in future research. If multiple

indicators of internal reference price are used, measurement methods and models need to be developed to test whether the different indicators capture the same underlying construct. In fact, the results of the current study showed that subjects' opinions about the normal and fair prices were inconsistent (see Table 11). There is another issue that deserves exploration in future research. Does using a certain buying method, such as the NYOP method, influence consumers' use of internal reference prices? Specifically, does using the NYOP method require consumers to make more effort to recall internal reference prices than when they use price-selection practices?

Another major limitation was that the current study prohibited subjects from searching for additional relevant information. Also, no specific manipulation-checking method was employed to ensure that subjects had followed the instruction and had not searched for additional relevant information. In future studies, an examination of IP logs may serve as a manipulation check to address the similar limitation. Although the restriction was necessary to achieve a valid result according to the experimental manipulation, the study missed an important aspect of consumer online purchase behavior. As suggested by the economics of information literature, as search costs decrease, greater search is likely (Stigler, 1961). The availability of detailed product and pricing information, the interactive nature of the medium, and the ease of extensive search may enhance consumers' willingness to search for price and other relevant information on the Internet. Researchers have found that consumers do not lower their search intentions even when reference prices are available (Jensen, Kees, Burton, & Turnipseed, 2003). The current study also found that subjects would have liked to have more information, whether reference prices were available or not, and whether external reference prices were provided as a list of prices or as an average price. For example, in each of the four groups in Experiment 1, over 75% of the subjects would have liked more information. The majority of the subjects in Experiments 2 and 3 (on

average, about 85% and 82%, respectively) would have liked more information regardless of the availability of reference prices.

Product familiarity and involvement also may play an important role in consumers' searching for and using reference price information. The current study only assumed that subjects would be more familiar with a travel route of Atlanta-Washington, DC than the route of Atlanta-Boise or Atlanta-Tokyo. Familiarity with the good or service being priced and the relationship between familiarity and the effect of reference prices were not directly investigated.

To examine consumers' purchase behaviors in a real online environment, more controlled settings that simulate a true online purchase environment may be necessary to address issues about consumer information search and product familiarity and involvement. Also, future studies should examine two questions related to reference prices. First, do different types of reference prices (e.g., external vs. internal reference prices) affect consumers' search behaviors differently and do multiple reference prices together affect consumers' search behaviors differently than each type of reference prices individually? Second, to what extent do consumers trust the reference prices provided by online vendors and how does the trustworthiness of the vendor-provided reference prices influence consumers' search behaviors? Third, how does price dispersion affect consumers' search and use of reference prices? How effective are external and/or internal reference prices when a product has a narrow price dispersion versus a wide price dispersion?

The current study also investigated subjects' emotions related to their decisions. There were three major limitations on this issue. First, the consequences of consumers' emotions were not addressed. For example, if a consumer felt regret about a negative outcome, what actions would s/he take? When bad things happen, people may do some behavioral repair work, that is,

take decisive actions to overcome, undo, or compensate for the negative outcome and feeling. With regard to an online purchase, a customer may cancel the order, return the goods, or switch to another vender and never again visit the site where s/he had the negative feeling. However, sometimes there is no effective action to be taken, so people engage in psychological repair work. Researchers have found that “identifying a silver lining in a dark cloud” can be one way to reduce the feeling of regret about a negative outcome (Gilovich & Medvec, 1995). “But I learned so much,” and “I got something important from the goods or services anyway” are common statements people use to cope with negative events and feelings. How consumers behaviorally and cognitively cope with negative outcomes of online purchases and what methods a vender can use to reduce consumers’ negative feelings would be two research questions for future study.

A second limitation related to consumers’ emotions in the current study was that only a positive feeling associated with individuals’ decision processes, that is, comfort with using the NYOP method, was investigated. Other process-related emotions such as frustration and confusion deserve examination in future studies and it is reasonable to link the latter two negative emotions to the availability of relevant information.

Finally, only a certain type of negative feeling, that is, regret about an outcome, was investigated in the current study. Other types of negative feelings such as dissatisfaction as well as positive feelings related to decision outcomes may be investigated in future studies. Researchers have suggested that regret and rejoicing may not be simple polar opposites (Connolly & Zeelenberg, 2002). Positive outcomes seem not to provoke the phenomena of searching for justification behaviorally and cognitively to cope with the feeling of regret. Similarly, different negative feelings such as regret versus dissatisfaction may lead to different consequences of decision outcomes. Therefore, to make a comparison between different types of

feelings as well as between positive and negative feelings may improve our understanding of decision-related emotions and how emotions influence decision processes and consequences.

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Appendix A

Questionnaire used in Experiment 1

Introduction

Thank you for your interest in the study. This research is conducted by Yi Cai, a Ph.D. candidate in the Department of Housing and Consumer Economics, University of Georgia, for his doctoral dissertation. We are interested in learning more about consumers' online shopping behavior and decision making.

Your participation is very important, because it will help us to understand a new online business model. To make this study a valid one, some information about your participation will be withheld until the completion of the study. Also, you will not be allowed to look at or search for information other than that provided in the study.

The experiment should take no more than 15 minutes of your time. You may work on the questions at your own pace. You will not be asked to provide any personal identification information along with your answers. Your responses will be seen only by the researcher.

After you complete the questionnaire, you will be invited to provide your name on a separate sheet to earn extra credit for your class. This information also will only be revealed to the researcher and the instructor of the class.

Click "Next" to get start. Please read the experimental scenario and questions carefully. By completing the questions you are agreeing to participate in the research. Your participation is totally voluntary. If you'd like to leave the study at any time, just click "Exit this survey." Note, however, that your responses will not be submitted until you have clicked "Done."

Thank you for your help.

Questions or concerns about the questionnaire may be directed to Yi Cai (706.542.4870; caiyi@uga.edu).

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 612 Boyd Graduate Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-mail Address IRB@uga.edu

<Next>

Introduction to the experimental scenario

Suppose you are participating in a travel study program this Fall and have to fly from Atlanta to Boise, Idaho and return to Atlanta. You must buy your own round trip airline ticket. You decide to buy your ticket through a Web-based travel agency that allows travelers to name their own price.

The name-your-own-price method works as follows: you enter information online about where and when you want to go and explicitly state how much you are willing to pay. The online agency then searches for an airline willing to release a seat at your price. If the agency finds a ticket at your price, it will purchase the ticket for you and charge you the exact amount you have stated. The ticket cannot be changed, transferred or cancelled.

If your bid is accepted, you could save money. But, if your bid is too low to be accepted, you won't get a ticket. Also, you won't be allowed to bid again for the same item through this agency for at least 72 hours.

<Next>

Questions regarding the pre-purchase preparation

Q1. Before submitting your bid, please think about the airfare. Do you have a price or a range of prices in mind?

- Yes
- No

(If Yes, answer questions 2-13. If No, answer questions 3-13.)

Q2. Type the price or prices you have in mind in the space below. Be as vague or as specific as you want. _____

Now I'm going to ask you a series of questions about what you think is the NORMAL price for the ticket. Each time you answer NO, you will be shown another choice.

Q3. Do you think the NORMAL price for the ticket is about \$100?

- Yes
- No

(If Yes, go to question Q8; If No, go to Q4)

Q4. Do you think the NORMAL price for the ticket is \$100-\$200?

- Yes
- No

(If Yes, go to question Q8; If No, go to Q5)

Q5. Do you think the NORMAL price for the ticket is \$200-\$400?

- Yes
- No

(If Yes, go to question Q8; If No, go to Q6)

Q6. Do you think the NORMAL price for the ticket is \$400-\$800?

- Yes
- No

(If Yes, go to question Q8; If No, go to Q7)

Q7. Do you think the NORMAL price for the ticket is over \$800?

- Yes
- No

<Next>

Now I'm going to ask you a series questions about what you think is the FAIR price for the ticket. Each time you answer NO, you will be shown another choice.

Q8. Do you think the FAIR price for the ticket is about \$100?

- Yes
- No

(If Yes, go to question Q13; If No, go to Q9)

Q9. Do you think the FAIR price for the ticket is \$100-\$200?

- Yes
- No

(If Yes, go to question Q13; If No, go to Q10)

Q10. Do you think the FAIR price for the ticket is \$200-\$400?

- Yes
- No

(If Yes, go to question Q13; If No, go to Q11)

Q11. Do you think the FAIR price for the ticket is \$400-\$800?

- Yes
- No

(If Yes, go to question Q13; If No, go to Q12)

Q12. Do you think the FAIR price for the ticket is over \$800?

- Yes
- No

<Next>

Q13. Which of the following did you use to come up with the price information you just entered?

- A previous flight to Boise, Idaho.
- Previous travel to similar destinations.
- Knowledge of international airfares.
- Knowledge of domestic airfares.
- A guess.
- Other (please specify)

(Note: The above are 13 questions for the manipulation of the Internal Reference Prices and will only be asked in the internal-reference-price group and the internal/external-reference price group.)

<Next>

Pre-purchase Information

Recent airfares for Atlanta-Boise round trip tickets were:

Airline A: \$253	Airline B: \$439	Airline C: \$653
Airline D: \$1005	Airline E: \$345	Airline F: \$208
Airline G: \$505	Airline H: \$980	Airline I: \$198

(Note: The above is for the manipulation of the External Reference Prices and will only be provided in the external-reference-price group and the internal/external-reference price group.)

<Next>

Note: The following questions will be asked for subjects in all of the four groups in Experiment 1.

Purchase the ticket

Q14. Now for the trip in question, name your own price for an Atlanta-Boise round trip ticket in the fall. Type in your price in dollars _____

<Next>

About the bid

Now please tell me how do you feel about the bid. (The format of the following questions is the Matrix with rating from 1-7 with 7 indicating completely agree and 1 indicating completely disagree.)

Q15. I feel comfortable using this method to buy this ticket.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q16. It was hard for me to name the price for this ticket.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q17. I would feel better if I had been given a price I could accept or reject instead of bidding.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q18. I would feel better if I had more information.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q19. How likely do you think it is that your bid would be successful (you would be able to buy an Atlanta-Boise round trip ticket at this price)? Please specify below the probability that your bid will be accepted by typing in a number between 0 and 100 with 0 indicating you are certain your bid would not be accepted and 100 indicating you are certain your bid would be accepted:

<Next>

Sorry, you underbid by \$10 and we cannot accept your bid. (for half of the participants)

Sorry, you underbid by \$100 and we cannot accept your bid. (for half of the participants)

<Next>

Now please tell me how do you feel about the result. (After knowing that their bids were rejected. Again, the format of the question is the Matrix with rating from 1-7.)

Q20. I should have bid differently.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q21. I did the best I could.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q22. I regret my decision to bid the price I bid.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q23. If I could do it over again, I would change my bid.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q24. I would have been happier if I had bid differently.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

<Next>

Personal Information

Q25. Now please tell me about yourself. Are you:

- Male
- Female

Q26. Your age: _____

<Next>

Online Searching Experience

Q27. When you use the Internet, what do you use it for? Check all that apply.

- E-mail
- Reading the news, weather or sports
- Homework for school
- Learning or gathering information (Not school related)
- Job searches
- Work/Business
- Communication with others such as in chat rooms or message boards
- Entertainment such as playing games
- Surfing
- Researching hobbies
- Making or researching travel information or reservations
- Looking for product or store information
- Buying goods or services
- Participating in online auctions by buying or selling products
- Other (please specify)

Q28. Excluding email, how often do you use the Internet?

- Several times a day
- About once a day
- 3-5 days a week
- 1-2 days a week
- Every few weeks
- Less often

<Next>

Online Shopping Experience

Q29. How often do you shop online, including looking for product or store information and buying goods or services?

- Everyday
- Several times a week
- Several times a month
- No more than once a month
- No more than once a year

<Next>

Air Travel Experience

Q30. Have you ever bought domestic or international airline tickets? (If Yes, go to question Q31. If No, go to question Q38.)

- Yes
- No

Q31. How did you buy the tickets? (You may choose more than one answer)

- From a travel agent's website.
- On the phone from a travel agent.
- From Priceline.com or another name-your-own-price website.
- In person.
- On the phone from an airline.
- From an airline's website.
- Other (please specify)

Q32. How often have you bought domestic or international airline tickets in the last three years?

- Several times a month
- Several times a year
- About once a year
- Less often

<Next>

Experience in using Name-Your-Own-Price methods to buy airline tickets

Q33. Have you ever bought airline tickets from Priceline.com or another name-your-own-price website? (If Yes, go to question Q34. If No, go to question Q38.)

- Yes
- No

Q34. How often have you used this method to buy airline tickets in the last three years?

- Several times a month
- Several times a year
- About once a year
- Less than once a year

Q35. How satisfied were you with the name-your-own-price method?

- Very satisfied
- Fairly satisfied
- Somewhat satisfied
- Neutral
- Somewhat unsatisfied
- Fairly unsatisfied
- Very unsatisfied

Q36. Have your bids ever been accepted by the website?

- Yes
- No

(If Yes, answer Q37; If No, go to Q38)

Q37. Which of the following helped you to make a successful bid?

- Search before bidding
- Knowledge of the prices
- Previous experience
- Help from friends/family members
- Luck
- Other

<Next>

Experience in using Name-Your-Own-Price methods to buy other goods and services

Q38. Have you ever bought any goods and services other than airline tickets from Priceline.com or another name-your-own-price website? (If Yes, go to question Q39; if No, go to Debriefing Statement.)

- Yes
- No

Q39. How often have you used this method in the last three years?

- Several times a month
- Several times a year
- About once a year
- Less than once a year

Q40. How satisfied were you with the name-your-own-price method?

- Very satisfied
- Fairly satisfied
- Somewhat satisfied
- Neutral
- Somewhat unsatisfied
- Fairly unsatisfied
- Very unsatisfied

Q41. Have your bids ever been accepted by the website?

- Yes
- No

(If Yes, answer Q42; If No, go to Debriefing Statement.)

Q42. Which of the following helped you to make a successful bid?

- Search before bidding
- Knowledge of the prices
- Previous experience
- Help from friends/family members
- Luck
- Other

<Next>
Debriefing Statement

The survey is complete. Thank you for your participation in this study. It will help us to understand how reference prices will affect consumers' uses of "Name-Your-Own-Price," a new business model of online shopping. If you don't want to submit your answers, click "Exit this survey" not "Done."

Appendix B

Questionnaire used in Experiment 2

Introduction

Thank you for your interest in the study. This research is conducted by Yi Cai, a Ph.D. candidate in the Department of Housing and Consumer Economics, University of Georgia, for his doctoral dissertation. We are interested in learning more about consumers' online shopping behavior and decision making.

Your participation is very important, because it will help us to understand a new online business model. To make this study a valid one, some information about your participation will be withheld until the completion of the study. Also, you will not be allowed to look at or search for information other than that provided in the study.

The experiment should take no more than 15 minutes of your time. You may work on the questions at your own pace. You will not be asked to provide any personal identification information along with your answers. Your responses will be seen only by the researcher.

After you complete the questionnaire, you will be invited to provide your name on a separate sheet to earn extra credit for your class. This information also will only be revealed to the researcher and the instructor of the class.

Click "Next" to get start. Please read the experimental scenario and questions carefully. By completing the questions you are agreeing to participate in the research. Your participation is totally voluntary. If you'd like to leave the study at any time, just click "Exit this survey." Note, however, that your responses will not be submitted until you have clicked "Done."

Thank you for your help.

Questions or concerns about the questionnaire may be directed to Yi Cai (706.542.4870; caiyi@uga.edu).

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 612 Boyd Graduate Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-mail Address IRB@uga.edu

<Next>

Introduction to the experimental scenario

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The name-your-own-price method works as follows: you enter information online about where and when you want to go and explicitly state how much you are willing to pay. The online agency then searches for an airline willing to release a seat at your price. If the agency finds a ticket at your price, it will purchase the ticket for you and charge you the exact amount you have stated. The ticket cannot be changed, transferred or cancelled.

If your bid is accepted, you could save money. But, if your bid is too low to be accepted, you won't get a ticket. Also, you won't be allowed to bid again for the same item through this agency for at least 72 hours.

<Next>

Questions regarding the pre-purchase preparation

Q1. Before submitting your bid, please think about the airfare. Do you have a price or a range of prices in mind?

- Yes
- No

(If Yes, answer questions 2-13. If No, answer questions 3-13.)

Q2. What you think is the average price for Atlanta-Washington, D.C. round trip tickets across all airlines that fly this route? Please type in the average price in dollars. _____

Now I'm going to ask you a series of questions about what you think is the NORMAL price for the ticket. Each time you answer NO, you will be shown another choice.

Q3. Do you think the NORMAL price for the ticket is less than \$100?

- Yes
- No

(If Yes, go to question Q8; If No, go to Q4)

Q4. Do you think the NORMAL price for the ticket is \$100-\$150?

- Yes
- No

(If Yes, go to question Q8; If No, go to Q5)

Q5. Do you think the NORMAL price for the ticket is \$150-\$200?

- Yes
- No

(If Yes, go to question Q8; If No, go to Q6)

Q6. Do you think the NORMAL price for the ticket is \$200-\$300?

- Yes
- No

(If Yes, go to question Q8; If No, go to Q7)

Q7. Do you think the NORMAL price for the ticket is over \$300?

- Yes
- No

<Next>

Now I'm going to ask you a series questions about what you think is the FAIR price for the ticket. Each time you answer NO, you will be shown another choice.

Q8. Do you think the FAIR price for the ticket is less than \$100?

- Yes
- No

(If Yes, go to question Q13; If No, go to Q9)

Q9. Do you think the FAIR price for the ticket is \$100-\$150?

- Yes
- No

(If Yes, go to question Q13; If No, go to Q10)

Q10. Do you think the FAIR price for the ticket is \$150-\$200?

- Yes
- No

(If Yes, go to question Q13; If No, go to Q11)

Q11. Do you think the FAIR price for the ticket is \$200-\$300?

- Yes
- No

(If Yes, go to question Q13; If No, go to Q12)

Q12. Do you think the FAIR price for the ticket is over \$300?

- Yes
- No

<Next>

Q13. Which of the following did you use to come up with the price information you just entered?

- A previous flight to Washington, D.C.
- Previous travel to similar destinations.
- Knowledge of international airfares.
- Knowledge of domestic airfares.
- A guess.
- Other (please specify)

(Note: The above are 13 questions for the manipulation of the Internal Reference Prices and will only be asked in the internal-reference-price group and the internal/external-reference price group.)

<Next>

Pre-purchase Information

Recent average price for Atlanta-Washington, D.C. round trip tickets across all airlines that fly this route is \$225.

(Note: The above is for the manipulation of the External Reference Prices and will only be provided in the external-reference-price group and the internal/external-reference price group.)

<Next>

Note: The following questions will be asked for subjects in all of the four groups in Experiment 2.

Purchase the ticket

Q14. Now for the trip in question, name your own price for an Atlanta-Washington, D.C. round trip ticket in the fall. Type in your price in dollars_____

<Next>

About the bid

Now please tell me how do you feel about the bid. (The format of the following questions is the Matrix with rating from 1-7 with 7 indicating completely agree and 1 indicating completely disagree.)

Q15. I feel comfortable using this method to buy this ticket.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q16. It was hard for me to name the price for this ticket.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q17. I would feel better if I had been given a price I could accept or reject instead of bidding.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q18. I would feel better if I had more information.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q19. How likely do you think it is that your bid would be successful (you would be able to buy an Atlanta-Washington, D.C. round trip ticket at this price)? Please specify below the probability that your bid will be accepted by typing in a number between 0 and 100 with 0 indicating you are certain your bid would not be accepted and 100 indicating you are certain your bid would be accepted: _____

<Next>

Sorry, you underbid by \$10 and we cannot accept your bid. (for half of the participants)

Sorry, you underbid by \$100 and we cannot accept your bid. (for half of the participants)

<Next>

Now please tell me how do you feel about the result. (After knowing that their bids were rejected. Again, the format of the question is the Matrix with rating from 1-7.)

Q20. I should have bid differently.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q21. I did the best I could.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q22. I regret my decision to bid the price I bid.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q23. If I could do it over again, I would change my bid.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q24. I would have been happier if I had bid differently.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

<Next>

Personal Information

Q25. Now please tell me about yourself. Are you:

- Male
- Female

Q26. Your age: _____

<Next>

Online Searching Experience

Q27. When you use the Internet, what do you use it for? Check all that apply.

- E-mail
- Reading the news, weather or sports
- Homework for school
- Learning or gathering information (Not school related)
- Job searches
- Work/Business
- Communication with others such as in chat rooms or message boards
- Entertainment such as playing games
- Surfing
- Researching hobbies
- Making or researching travel information or reservations
- Looking for product or store information
- Buying goods or services
- Participating in online auctions by buying or selling products
- Other (please specify)

Q28. Excluding email, how often do you use the Internet?

- Several times a day
- About once a day
- 3-5 days a week
- 1-2 days a week
- Every few weeks
- Less often

<Next>

Online Shopping Experience

Q29. How often do you shop online, including looking for product or store information and buying goods or services?

- Everyday
- Several times a week
- Several times a month
- No more than once a month
- No more than once a year

<Next>

Air Travel Experience

Q30. Have you ever bought domestic or international airline tickets? (If Yes, go to question Q31. If No, go to question Q38.)

- Yes
- No

Q31. How did you buy the tickets? (You may choose more than one answer)

- From a travel agent's website.
- On the phone from a travel agent.
- From Priceline.com or another name-your-own-price website.
- In person.
- On the phone from an airline.
- From an airline's website.
- Other (please specify)

Q32. How often have you bought domestic or international airline tickets in the last three years?

- Several times a month
- Several times a year
- About once a year
- Less often

<Next>

Experience in using Name-Your-Own-Price methods to buy airline tickets

Q33. Have you ever bought airline tickets from Priceline.com or another name-your-own-price website? (If Yes, go to question Q34. If No, go to question Q38.)

- Yes
- No

Q34. How often have you used this method to buy airline tickets in the last three years?

- Several times a month
- Several times a year
- About once a year
- Less than once a year

Q35. How satisfied were you with the name-your-own-price method?

- Very satisfied
- Fairly satisfied
- Somewhat satisfied
- Neutral
- Somewhat unsatisfied
- Fairly unsatisfied
- Very unsatisfied

Q36. Have your bids ever been accepted by the website?

- Yes
- No

(If Yes, answer Q37; If No, go to Q38)

Q37. Which of the following helped you to make a successful bid?

- Search before bidding
- Knowledge of the prices
- Previous experience
- Help from friends/family members
- Luck
- Other

<Next>

Experience in using Name-Your-Own-Price methods to buy other goods and services

Q38. Have you ever bought any goods and services other than airline tickets from Priceline.com or another name-your-own-price website? (If Yes, go to question Q39; if No, go to Debriefing Statement.)

- Yes
- No

Q39. How often have you used this method in the last three years?

- Several times a month
- Several times a year
- About once a year
- Less than once a year

Q40. How satisfied were you with the name-your-own-price method?

- Very satisfied
- Fairly satisfied
- Somewhat satisfied
- Neutral
- Somewhat unsatisfied
- Fairly unsatisfied
- Very unsatisfied

Q41. Have your bids ever been accepted by the website?

- Yes
- No

(If Yes, answer Q42; If No, go to Debriefing Statement.)

Q42. Which of the following helped you to make a successful bid?

- Search before bidding
- Knowledge of the prices
- Previous experience
- Help from friends/family members
- Luck
- Other

<Next>

Debriefing Statement

The survey is complete. Thank you for your participation in this study. It will help us to understand how reference prices will affect consumers' uses of "Name-Your-Own-Price," a new business model of online shopping. If you don't want to submit your answers, click "Exit this survey" not "Done."

Appendix C

Questionnaire used in Experiment 3

Introduction

Thank you for your interest in the study. This research is conducted by Yi Cai, a Ph.D. candidate in the Department of Housing and Consumer Economics, University of Georgia, for his doctoral dissertation. We are interested in learning more about consumers' online shopping behavior and decision making.

Your participation is very important, because it will help us to understand a new online business model. To make this study a valid one, some information about your participation will be withheld until the completion of the study. Also, you will not be allowed to look at or search for information other than that provided in the study.

The experiment should take no more than 15 minutes of your time. You may work on the questions at your own pace. You will not be asked to provide any personal identification information along with your answers. Your responses will be seen only by the researcher.

After you complete the questionnaire, you will be invited to provide your name on a separate sheet to earn extra credit for your class. This information also will only be revealed to the researcher and the instructor of the class.

Click "Next" to get start. Please read the experimental scenario and questions carefully. By completing the questions you are agreeing to participate in the research. Your participation is totally voluntary. If you'd like to leave the study at any time, just click "Exit this survey." Note, however, that your responses will not be submitted until you have clicked "Done."

Thank you for your help.

Questions or concerns about the questionnaire may be directed to Yi Cai (706.542.4870; caiyi@uga.edu).

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 612 Boyd Graduate Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-mail Address IRB@uga.edu

<Next>

Introduction to the experimental scenario

Suppose you are participating in a study abroad program this Fall and have to fly from Atlanta to Tokyo, Japan and return to Atlanta. You must buy your own round trip airline ticket. You decide to buy your ticket through a Web-based travel agency that allows travelers to name their own price.

The name-your-own-price method works as follows: you enter information online about where and when you want to go and explicitly state how much you are willing to pay. The online agency then searches for an airline willing to release a seat at your price. If the agency finds a ticket at your price, it will purchase the ticket for you and charge you the exact amount you have stated. The ticket cannot be changed, transferred or cancelled.

If your bid is accepted, you could save money. But, if your bid is too low to be accepted, you won't get a ticket. Also, you won't be allowed to bid again for the same item through this agency for at least 72 hours.

<Next>

Pre-purchase Information

Recent average price for Atlanta-Tokyo round trip tickets across all airlines that fly this route is

\$620. (This if for participants in Low external-price group.)

Recent average price for Atlanta-Tokyo round trip tickets across all airlines that fly this route is

\$1150. (This if for participants in High external-price group.)

<Next>

Note: The following questions will be asked for subjects in both two groups in Experiment 3.

Purchase the ticket

Q1. Now for the trip in question, name your own price for an Atlanta-Tokyo round trip ticket in the fall. Type in your price in dollars_____

<Next>

About the bid

Now please tell me how do you feel about the bid. (The format of the following questions is the Matrix with rating from 1-7 with 7 indicating completely agree and 1 indicating completely disagree.)

Q2. I feel comfortable using this method to buy this ticket.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q3. It was hard for me to name the price for this ticket.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q4. I would feel better if I had been given a price I could accept or reject instead of bidding.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q5. I would feel better if I had more information.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q6. How likely do you think it is that your bid would be successful (you would be able to buy an Atlanta-Tokyo round trip ticket at this price)? Please specify below the probability that your bid will be accepted by typing in a number between 0 and 100 with 0 indicating you are certain your bid would not be accepted and 100 indicating you are certain your bid would be accepted:

<Next>

Sorry, you underbid by \$10 and we cannot accept your bid. (for half of the participants)

Sorry, you underbid by \$100 and we cannot accept your bid. (for half of the participants)

<Next>

Now please tell me how do you feel about the result. (After knowing that their bids were rejected. Again, the format of the question is the Matrix with rating from 1-7.)

Q7. I should have bid differently.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q8. I did the best I could.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q9. I regret my decision to bid the price I bid.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q10. If I could do it over again, I would change my bid.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

Q11. I would have been happier if I had bid differently.

- Completely agree
- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Completely disagree

<Next>

Personal Information

Q12. Now please tell me about yourself. Are you:

- Male
- Female

Q13. Your age: _____

<Next>

Online Searching Experience

Q14. When you use the Internet, what do you use it for? Check all that apply.

- E-mail
- Reading the news, weather or sports
- Homework for school
- Learning or gathering information (Not school related)
- Job searches
- Work/Business
- Communication with others such as in chat rooms or message boards
- Entertainment such as playing games
- Surfing
- Researching hobbies
- Making or researching travel information or reservations
- Looking for product or store information
- Buying goods or services
- Participating in online auctions by buying or selling products
- Other (please specify)

Q15. Excluding email, how often do you use the Internet?

- Several times a day
- About once a day
- 3-5 days a week
- 1-2 days a week
- Every few weeks
- Less often

<Next>

Online Shopping Experience

Q16. How often do you shop online, including looking for product or store information and buying goods or services?

- Everyday
- Several times a week
- Several times a month
- No more than once a month
- No more than once a year

<Next>

Air Travel Experience

Q17. Have you ever bought domestic or international airline tickets? (If Yes, go to question Q18. If No, go to question Q25.)

- Yes
- No

Q18. How did you buy the tickets? (You may choose more than one answer)

- From a travel agent's website.
- On the phone from a travel agent.
- From Priceline.com or another name-your-own-price website.
- In person.
- On the phone from an airline.
- From an airline's website.
- Other (please specify)

Q19. How often have you bought domestic or international airline tickets in the last three years?

- Several times a month
- Several times a year
- About once a year
- Less often

<Next>

Experience in using Name-Your-Own-Price methods to buy airline tickets

Q20. Have you ever bought airline tickets from Priceline.com or another name-your-own-price website? (If Yes, go to question Q21. If No, go to question Q25.)

- Yes
- No

Q21. How often have you used this method to buy airline tickets in the last three years?

- Several times a month
- Several times a year
- About once a year
- Less than once a year

Q22. How satisfied were you with the name-your-own-price method?

- Very satisfied
- Fairly satisfied
- Somewhat satisfied
- Neutral
- Somewhat unsatisfied
- Fairly unsatisfied
- Very unsatisfied

Q23. Have your bids ever been accepted by the website?

- Yes
- No

(If Yes, answer Q24; If No, go to Q25)

Q24. Which of the following helped you to make a successful bid?

- Search before bidding
- Knowledge of the prices
- Previous experience
- Help from friends/family members
- Luck
- Other

<Next>

Experience in using Name-Your-Own-Price methods to buy other goods and services

Q25. Have you ever bought any goods and services other than airline tickets from Priceline.com or another name-your-own-price website? (If Yes, go to question Q26; if No, go to Debriefing Statement.)

- Yes
- No

Q26. How often have you used this method in the last three years?

- Several times a month
- Several times a year
- About once a year
- Less than once a year

Q27. How satisfied were you with the name-your-own-price method?

- Very satisfied
- Fairly satisfied
- Somewhat satisfied
- Neutral
- Somewhat unsatisfied
- Fairly unsatisfied
- Very unsatisfied

Q28. Have your bids ever been accepted by the website?

- Yes
- No

(If Yes, answer Q29; If No, go to Debriefing Statement.)

Q29. Which of the following helped you to make a successful bid?

- Search before bidding
- Knowledge of the prices
- Previous experience
- Help from friends/family members
- Luck
- Other

<Next>
Debriefing Statement

The survey is complete. Thank you for your participation in this study. It will help us to understand how reference prices will affect consumers' uses of "Name-Your-Own-Price," a new business model of online shopping. If you don't want to submit your answers, click "Exit this survey" not "Done."