The Effects of Price Dispersion and Suggested List Price
on Consumers' Internal Reference Price

The Purpose of this study is to explore the effects of price dispersion and the moderating effects of suggested list prices (SLP) and brand image on consumers' internal reference prices (IRP).   The results show that high price dispersion enlarges the variance of consumers' upper boundaries and the IRP ranges.   Furthermore, it also brings down consumers' lower boundary IRP and enlarges the IRP range.   However, the SLP from brand owners may reduce the effects of price dispersion on the variance of IRP.   The findings suggest the policy makers should closely monitor price dispersions to protect consumers' interests.   Meanwhile, a reasonable policy would be helpful to regulate brand owners on providing a deceptive SLP.

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Introduction

Consumers may unavoidably perceive various prices for a product category.   The major reasons are the differences of retailing types and the severe price promotions resulting from the channel competition.   The price variance across stores for a specific brand or product is called "price dispersion" (Grewal and Marmorstein 1994; Stigler 1961; Urbany 1986).   Price dispersion may influence the efforts that consumers have to put into searching the information (Grewal and Marmorstein 1994; Zimmermann and Geistfeld 1984), but past research has less exploration on its effects on consumers' price perceptions as well as its harmfulness of consumers' interests.

The expected effect of high price dispersion on consumers' interests can be discussed in two folds.   On the one hand, those disadvantaged consumers, who are more likely unaware of the high price dispersion, may lose the chance to find the best bargain, and then finally pay with a higher price.   On the other hand, if consumers are aware of the high price dispersion, then several negative effects may be expected.   First, they feel confused about how much the fair price is.   Second, they may form a false or chaotic price perception toward this product.   Third, their loadings of information processing increase with the need of price comparisons.   Finally, they may have difficulties in making their purchase decisions.   If so, high price dispersion should be prevented or regulated by policy makers and brand owners.

Policy makers concern consumers' interests by protecting them from the above negative effects of high price dispersion and by providing consumers a market with fair prices.   The brand owners may consider using their suggested list prices (SLP) to prevent price chaos in the retailing outlets.   Since the brand owners can manipulate the SLP, its effect on the price dispersion and the consumers' interests should be explored at the same time.   Liefeld and Heslop (1985) found no effect of manufacturer's SLP on consumers' perceived ordinary prices.   However, they did not test the potential effects on other types of internal reference price index, such as the acceptable price.   This study proposes that the SLP may help to eliminate the negative impact of high price dispersion, and may also directly influence consumers' internal reference price (IRP).

The objective of this research has three-folds.   First, the effect of price dispersion on a consumer's IRP is investigated.   The second objective is to verify the effect of the SLP on the IRP, and how the SLP moderates the relationship of price dispersion on the IRP.   Lastly, brand image is considered in order to discuss its main effect on the IRP and the moderating effects.

Literature Review

In this section, the definition of price dispersion and its relationship with consumers' internal reference prices are reviewed first.   Suggested list price and brand image are discussed next to introduce the related hypotheses.

Price Dispersion

Price dispersion was initially used to describe the variance of a product's market price. In Stigler's theory, the price variance was assumed to exist prior to a consumer's perception of the price dispersion (Urbany 1986). Grewal and Marmorstein (1994) separated the concept into "consumers' subjective market price range" and "actual market price range" in order to distinguish the perceptual and actual price dispersion. Both were measured according to the range between the highest and the lowest prices. Their research results implied that consumers were capable of detecting the market price variance but tended to exaggerate the variance.

Urbany (1986) also provided the operational definition of price dispersion as the subject's expectation of price ranges that he/she could potentially observe in the market. His manipulation of price dispersion was to inform respondents of either the range of market price variance or merely the rank of retailers' prices, from the highest to the lowest price. While his method was appropriate for studying consumers' information searching behaviors, the current study is more interested in investigating, first, how consumers perceive the price dispersion phenomenon and second, how the price perceptions influence their IRPs. The definition of price dispersion here is the same as that in Urbany (1986), but manipulated in a different way. This will be introduced in the later section.

Internal Reference Price

A reference price is defined as "the standard price against which consumers evaluate the actual prices of the products they are considering (Rajendran and Tellis 1994, p.22)." It has been studied for decades because of its importance to consumers' purchase decisions, and brand owners and retailers' pricing strategies. Although the formation of a reference price is still ambiguous and the definitions are diverse (e.g. fair price, expected price etc.), it is commonly accepted that a reference price should be further categorized into the internal reference price (IRP) and the external reference price (ERP).

The IRP is defined as the price or price scale in a buyer's memory that serves as a basis for judging or comparing actual prices (Grewal, Monroe and Krishnam 1998). In short, it represents the consumer's memory of past prices of a brand or product (Mazumdar and Papatla 2000) or an aspiration price (Klein and Oglethorpe 1987). A past price, a last price paid, a fair price, a price expectation, or a regular price estimate was often used as the measurement for an IRP (Briesch et al., 1997; Mayhew and Winer 1992; Urbany and Dickson 1991; Grewal et al. 1998b). Liechtenstein and Bearden (1989) clarified these varieties of consumer price standards (i.e., IRP standards) and their relationships, including normal price perceptions, the latitude of price acceptance, and the IRP range. The range of an IRP was a subset of normal market prices in their study. IRP standards were used as indicators for an IRP to represent various kinds of cognitive reference points (Lichtenstein et al. 1991). The formation of IRP standards is a dynamic adjusted process. Many factors affect IRPs, including consumer related factors such as consumer characteristics and product involvement (Kalyanaram and Little 1994; Lichtenstein, Bloch and Black 1988), price related factors such as price variability, price consciousness, price quality inference (Kalyanaram and Little 1994; Lichtenstein, et al 1988), advertised reference prices (Grewal et al. 1998b; Urbany et al. 1988), evoked prices (Janiszewski and Lichtenstein 1999), past price history (Slonim and Garbarino 1999), promotion prices (Alba et al. 1999), and contingencies or contextual factors (Adaval and Monroe 2002; Yadav and Seiders 1998).

An acceptable price is used as the operational definition of an IRP in this study because of its closer relationships with price judgments and purchase decisions (Lichtenstein et al. 1988). In the past researches, the range of acceptable prices stored in a consumer's memory was used to compare with the price cue and form the price acceptability (Lichtenstein et al. 1988). Kalyanaram and Little (1994) showed that price variability, reference price level, and brand loyalty had positive relationships with the latitude of acceptable prices while the purchase frequency had a negative relationship with this latitude. Therefore, this study concerns more about the effects of price dispersion and SLP on consumers' acceptable prices rather than other internal reference prices.

The Effects of Price Dispersion on IRP

Niedrich, Sharma and Wedell (2001) used the exemplar model of categorization to conceptualize the IRP range, which was measured as the latitude of acceptable prices rather than a single summary price in their study. The IRP range is thus determined by the range and the distribution of market prices. Similarly, Janiszewski and Lichtenstein (1999) demonstrated that the end points of an evoked price range provided the price judgment, and the price variability determined the width of an evoked price based on Range Theory. Higher price variability and uncertainty produce a wider range of prices a consumer is willing to pay. As Range Theory predicts, there is a rectilinear relationship between the range of stimulus and that of the judgment scale (Volkman 1951). Thus one would expect that high price dispersion may widen a consumer's IRP range.

Furthermore, it is postulated that the high price dispersion may raise the inconsistency of the IRP in consumers' mind. Consumers perceive inconsistent external information when exposed to various prices. The

inconsistent price information may confuse the consumers and induce an inconsistency in their IRPs. Therefore, keeping the average of market prices the same; one would expect that high price dispersion in the market will result in a larger variance of IRPs.

H_1: The price dispersion has an effect on a consumer's IRP.

H_{1a}: The variance of the upper boundary of a consumer's IRP is larger in a market of high price dispersion than in a market of low price dispersion.

H_{1b}: The variance of the lower boundary of a consumer's IRP is larger in a market of high price dispersion than in a market of low price dispersion.

H_{1c}: The variance of a consumer's IRP range is larger in a market of high price dispersion than in a market of low price dispersion.

H_{1d}: A consumer's range of IRP is wider in a market of high price dispersion than in a market of low price dispersion.

Suggested List Price (SLP)

The SLP is one type of external reference prices that consumers can observe in outlets (Mayhew and Winer 1992; Urbany et al. 1988). The current study focuses on the effect of SLP offered by brand owners. The brand owners provide this reference price to consumers to compare with the selling prices. A brand owner can be a producer, manufacturer, agent of a brand, or the retailer of a private brand. The selling prices of private brands rarely vary over counters because they are sold in certain retail channels only. Therefore, it is more meaningful to focus on the price dispersion issue of brands by producers, manufacturers, or agents. The SLP is underwritten with a brand owner's reputation, whose effects are expected to be different from other external reference prices, such as a retailer's reference price. Although it is commonly used in the market, the SLP received less attention than the advertised reference price from retailers in previous studies (Blair et al. 2002; Compeau et al. 2002; Lichtenstein and Bearden 1989; Lichtenstein et al. 1991, Urbany et al. 1988). So far, no effect of the manufacturers' SLP on consumers' perceptions of ordinary selling prices was found (Ahmed and Gulas 1982; Liefeld and Heslop, 1985), and the vague meaning of manufacturers' SLP might result in this insignificant effect (Compeau et al. 2004; Grewal and Compeau 1992).

The SLP printed on the package of the product is more believable than other advertised reference prices on the shelf. It guarantees the highest market prices that consumers may see anywhere. Therefore, the SLP can be analogous to the anchor of the assimilation and contrast processes. As originally introduced by Sherif, Taub and Hovland (Helson 1964, p. 225), when an anchor is placed at the end or slightly removed from the end of a series, the scale of judgment should be displaced toward the anchor. This assimilation effect makes the judgment scale expand. However, if the reference point is placed too far away, the target will be displaced and judged in the opposite direction. This contrast effect results in a constriction of the scale and a narrower range.

The SLP, which acts as an anchor, eliminates consumers' confusion of inconsistent price information. The concept of the assimilation-contrast effect can be applied to the analysis of the effects of the SLP. While the SLP, as the highest price in the market, is close to the highest observed market price, consumers may assimilate their IRPs toward this new SLP point. However, consumers know well that the purpose of the SLP is to influence their price judgments toward the higher point presented by the SLP. When the assimilation framing becomes apparent, a correction contrast effect occurs (Lombardi, Higgins, and Bargh 1987; Strack et al. 1993). As a result, consumers' judgment scales are more constricted in both upper and lower boundary of IRP, which is revealed by less variance in the boundaries of IRPs. Most of the time, the SLP is equal to or higher than the highest market price. Therefore, consumers are expected to refer to the SLP and adjust their upper boundary of IRP. The effect of SLP on the lower boundary of IRP is relatively uncertain. To generate the price perception of a product, some consumers may rely more on the market prices but less on the SLP; others may behavior oppositely. However, compared with the situation without SLP offered, it is expected that consumers' IRP is more consistent with less variance when the SLP is available. Thus,

H_2: The SLP has an effect on a consumer's IRP.

H_{2a}: The variance of the upper boundary of a consumer's IRP is smaller when the SLP is offered as opposed to when the SLP is not offered.

H_{2b}: The variance of the lower boundary of a consumer's IRP is smaller when the SLP is offered as opposed to when the SLP is not offered.

H_{2c}: The variance of a consumer's IRP range is smaller when the SLP is offered as opposed to when the SLP is not offered.

When higher price dispersion enlarges the variance and range of an IRP, the SLP that serves as a judgmental anchor helps to reduce the price confusion and the variance of the IRP. This moderating effect is

expected to be more obvious under high price dispersion due to less ceiling effects.

H_3: The SLP moderates the effects of price dispersion on the variance of an IRP.

H_{3a}: The effect of price dispersion on the variance of the upper boundary of a consumer's IRP is smaller when the SLP is offered as opposed to when the SLP is not offered.

H_{3b}: The effect of price dispersion on the variance of the lower boundary of a consumer's IRP is smaller when the SLP is offered as opposed to when the SLP is not offered.

H_{3c}: The effect of price dispersion on the variance of a consumer's IRP range is smaller when the SLP is offered as opposed to when the SLP is not offered.

<u>Brand Image</u>

Brand image (or brand name in some studies) also has effects on a consumer's perception of quality and the IRP (Biswas and Sherrell 1993; Dodds et al. 1991; Grewal, Krishnan, Baker and Borin 1998a; Jacoby et al. 1971; Hunt and Keaveney 1994; Rao and Monroe 1989; Yadav and Seiders 1998). A prestige brand is perceived as being of superior quality, which helps to promote a higher IRP (Grewal et al. 1998a).

We propose that a brand with a prestige image can reduce the uncertainty provided by the high price dispersion. For a prestige brand, consumers may regard the extreme high market prices as reasonable and easily accept the suggestion. The effect of high price dispersion on IRP then is smaller. However, for an inferior brand name, the extreme high market prices are noticed and considered overpriced because of the perceived low quality. For an extreme low price, consumers tend to believe it is a temporary promotion offered by retailers; it is not directly related to the brand itself. Overall, the effect of high price dispersion on an IRP is smaller for a prestige brand than for an inferior brand. Hence,

H_4: The brand image moderates the effects of price dispersion on the variance of an IRP.

H_{4a}: The effect of price dispersion on the variance of the upper boundary of a consumer's IRP is smaller for a prestige brand than for an inferior brand.

H_{4b}: The effect of price dispersion on the variance of the lower boundary of a consumer's IRP is smaller for a prestige brand than for an inferior brand.

H_{4c}: The effect of price dispersion on the variance of a consumer's IRP range is smaller for a prestige brand than for an inferior brand.

The SLP is tied with the brand of the product because the brand is mainly operated by the brand owner. The SLP is more reliable and creditable when it is offered by a prestige brand. Consequently, the variance of an IRP is reduced more when the SLP is provided by a prestige brand than by an inferior one.

H_5: The brand image influences the moderating effects of the SLP on price dispersion to a consumer's IRP.

H_{5a}: The reducing effect of the SLP on the influence of price dispersion on the variance of the upper boundary of a consumer's IRP (H_{3a}) is stronger for a prestige brand than for an inferior brand.

H_{5b}: The reducing effect of SLP on the influence of price dispersion on the variance of the lower boundary of a consumer's IRP (H_{3b}) is stronger for a prestige brand than for an inferior brand.

H_{5c}: The reducing effect of SLP on the influence of price dispersion on the variance of a consumer's IRP range (H_{3c}) is stronger for a prestige brand than for an inferior brand.

Method

The main study is a 2 (price dispersion: high vs. low) × 2 (SLP: with SLP vs. without SLP offered) × 2 (brand image: prestige vs. inferior) between-subject experimental design. Three pretests were run first to select a proper product, brands, and price ranges for the purpose of this study.

<u>Pretest 1</u>

Pretest 1 was to decide the product category and the representatives of prestige and inferior brands. Milk was selected from a list of consumer products because it is the most familiar and frequently purchased product for students; this ensures that they are familiar with market prices. Another bonus with using milk is that the price dispersion in the real market is suitably big but not related to the brand image. Only the results of the brands of milk are reported in the following.

The representatives of prestige and inferior brands were selected from 14 milk brands in Taiwan. In Pretest 1, 43 undergraduate students were asked to evaluate the overall impressions and expected quality of each brand on a 7-point scale, from "very poor" to "very good". The results of these two questions are consistent. The representatives of the prestige brand (overall impressions: Mean = 5.30, SD = 1.06; expected quality: Mean = 5.30, SD = 1.17) and the inferior brand (overall impressions: Mean = 3.65, SD = 1.17; expected quality: Mean = 3.60, SD

= 1.07) were chosen due to the extreme mean value and smaller standard deviation.   T-tests of overall impressions (t = 8.79, p < 0.0001) and quality evaluation (t = 8.44, p < 0.001) both indicated the significant difference between the prestige and inferior brands.

Pretest 2

Pretest 2 was to decide the manipulation level of price dispersion.   Following the designs in the previous studies (Janiszewski and Lichtenstein 1999; Niedrich et al. 2001), 31 participants were presented with a common market price prior to the price judgment (NT\$89 for 2-liter milk).   Next, they were asked to provide estimates for their IRP range and the boundaries (measured as acceptable price) of 2-liter milk for both brands.   The boundaries of the IRP were quite similar for both brands.   Lower and upper boundaries of the IRP were around NT\$72 ($SD_{(prestige)}$ = 1.94 versus $SD_{(inferior)}$ = 2.63) and NT\$91 ($SD_{(prestige)}$ = 1.29 versus $SD_{(inferior)}$ = 1.16) respectively.   The average acceptable price range was around NT\$19 ($SD_{(prestige)}$ = 2.45 versus $SD_{(inferior)}$ = 2.00).   The market prices of low price dispersion were then designed within this range, while market prices of high price dispersion were set beyond this range (as presented in Table 1).   In Table 1, markets prices are listed for two conditions of price dispersion (high v.s. low price dispersion).   In the condition of high price dispersion, the market prices of retailer A to G show a greater dispersion compare to the condition of low price dispersion.

Pretest 3

A set of 32 participants, 8 participants for each level of brand image and price dispersion, helped to confirm that the price ranges of high versus low price dispersion were significant enough.   The participants were questioned about how they perceived the difference of high and low selling prices (as listed in Table 1) of each brand on a 7-point Likert-type scale.   For both brands, the high price dispersion condition had larger perceived price difference than the low price dispersion condition, $Mean_{(high\ PD)}$ = 5.63 versus $Mean_{(low\ PD)}$ = 3.00, t = 4.65 (p < 0.01) for the prestige brand and $Mean_{(high\ PD)}$ = 5.25 versus $Mean_{(low\ PD)}$ = 3.75, t = 3.384 (p < 0.01) for the inferior brand.

Table 1
Market Prices Manipulated for High and Low Price Dispersion

Retailer:	A	B	C	D	E	F	G
High Price Dispersion	70	88	105	77	94	83	99
Low Price Dispersion	85	88	91	86	89	87	90

Variables of Main Study

Price dispersion was defined as the difference between the highest price and the lowest price across stores in the market at a given point in time (Grewal and Marmorstein 1994; Urbany 1986).   In this study, high/low price dispersion was manipulated beyond/within the range of acceptable market prices retrieved from Pretest 2.   The average market prices for both sets were kept the same, while the ranges were different.

The SLP was at NT\$105, which was close to and higher than the highest market prices.   This variable was manipulated by either including or not including the SLP in the provided information.   Brand image was represented by the true brand in the market.   They were selected based on the results of Pretest 1.

In summary, this study has four dependent variables: the variance of the upper boundary of IRP ($H_{1a\sim5a}$), the variance of the lower boundary of IRP ($H_{1b\sim5b}$), the variance of the IRP range ($H_{1c\sim5c}$), and the mean of the IRP range (H_{1d}).   The variance of the IRP, was measured by "the most (least) you would be willing to pay for this brand, with least referring to the price below which infers inferior quality (Janiszewski and Lichtenstein 1999; Lichtenstein et al. 1988)." The most willing-to-pay price referred to the maximum acceptable price, which was the upper boundary of the IRP.   The least willing-to-pay price referred to the minimum acceptable price, which was the lower boundary of the IRP.   The difference was then calculated for the acceptable price range.

Procedures and Materials of Main Study

The stimulus was disguised by a one-page fictitious excerpt of Consumer Reports, which ensured the credibility of information provided.   The main theme of the article concerned the quality and price survey of major brands of milk.   The fictitious excerpt had three parts: the purpose of this survey, the key findings, and the market prices across retailer outlets for the major brands.   It was emphasized at the beginning of the article that Consumer Reports had noticed the price differences of milk in the market were large, but did not necessarily coincide with the quality of each brand.

A price table was presented at the third part of the excerpt, designed as a matrix of seven retail outlets and five milk brands. Each participant received either the prestige or inferior brand with four other real major brands with moderate image in the market. In the last column of this table, an evaluative column of amount of protein was added. The best was always the experimental brand. The sequences of market prices of the experimental brands were listed in two randomly arranged versions to prevent any order effect. Also, half of the participants were provided with the information about the SLP in the price table; half are not. All the information and materials were tested and modified in a small pretest to ensure the believability and clear presentation.

The whole experiment proceeded in roughly 20 minutes. At the beginning, an oral brief was given and a booklet was passed to each participant. The first page of the booklet contained the manipulated material. Participants had five minutes to read the excerpt thoroughly. Starting from the second page, there were questions about acceptable prices, screening items, and manipulation checks. They were not allowed to return back to the article once they started answering the questions. For the maximum and minimum acceptable prices, the questions were: "If you want to purchase the 2-liter [prestige or inferior brand name] milk, without considering the retailers, the highest price you are willing to pay is _____; the lowest price you are willing to pay is _____ without suspecting the inferior quality". At the end, participants were asked about their knowledge of milk brands and their purchase and consumption behaviors. They were debriefed after the experiment.

Results

A total of 207 male and female undergraduate students participated in the experiment. The criteria of an eligible subject are 1) an acceptable level at the evaluation of reasonableness and believability of the excerpt, 2) correct recalls about the SLP, and 3) to have reasonable acceptable prices. For example, respondents who provide the minimum acceptable price below NT\$50, such as zero, were excluded, because 2-liter milk is never priced below NT\$50 in the market. The consumers also seldom get the 2-liter milk for free in the market, thus zero are unreasonable. For the manipulation check of price dispersion, participants who faced the high price dispersion condition should perceive the price differences in the market really higher than those who deal with the low price dispersion condition. The manipulation is successful for both experiment brands ($t_{(prestige)} = 6.91$, $p < 0.01$; $t_{(inferior)} = 5.57$, $p < 0.01$). With respect to the differences in brand image, two brands are significantly different at the measures of the overall impressions ($t = 3.28$, $p < 0.01$) and expected quality ($t = 2.43$, $p < 0.05$).

In the next section, the results are reported according to the effect of price dispersion, the SLP and brand image. Levene tests were the main analysis methods to test the hypotheses of the IRP variance. The hypothesis relating to the mean of the IRP range was analyzed through a three-way ANOVA.

The Effect of Price Dispersion
First of all, the result indicates a significant main effect of price dispersion on the variance of the upper boundary IRP, with $F_{(1, 156)} = 3.80$ ($p = 0.05$). The group with high price dispersion (SD = 12.64) has a larger variance than that with low price dispersion (SD = 10.10). H_{1a} is supported. Then, for the variance of the lower boundary IRP, no main effect is found. Hypotheses H_{1b} is not supported. Finally, high price dispersion significantly enlarges the variance of IRP ranges, $SD_{(high PD)} = 11.91$ versus $SD_{(low PD)} = 8.87$ with $F_{(1, 156)} = 5.50$ ($p = 0.02$). H_{1c} is supported. It shows that high price dispersion causes the inconsistent acceptable price range in respondents' perceptions.

A three-way ANOVA is used to verify the hypotheses of IRP ranges. A Levene test of the dependent variable across eight groups was conducted first to ensure the equal variance, with the result of $F_{(7, 150)} = 1.36$ ($p > 0.05$), which satisfies the basic assumption of an ANOVA analysis. The ANOVA results show the main effect of price dispersion: $Mean_{(high PD)} = 23.18$ versus $Mean_{(low PD)} = 17.55$ with $F_{(1, 156)} = 12.43$ ($p < 0.01$), which supports H_{1d}.
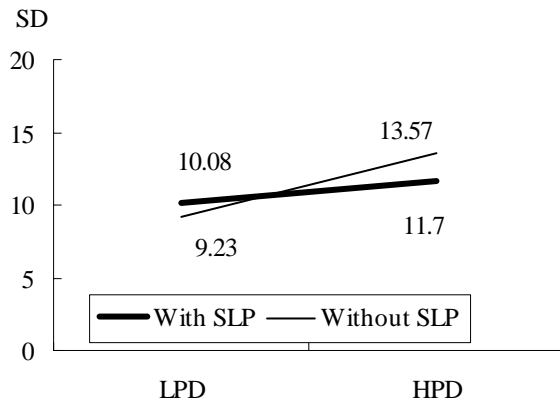
The Effect of SLP
For the variance of the upper boundary of IRP, the main effect of the SLP is not found and no difference is observed with (SD = 10.80) or without (SD = 11.71) the SLP ($F_{(1, 156)} = 0.50$, $p > 0.05$). So, H_{2a} is not supported. Besides, the moderating effect of the SLP is not significant with $F_{(3, 154)} = 2.44$ ($p < 0.07$). However, the effect of price dispersion on the variance of the upper boundary is smaller when the SLP is offered than when it is not (Figure 1), same as the predicted direction in H_{3a}. For the variance of the lower boundary IRP, none of the main or interaction effects is found. Hypotheses H_{2b} and H_{3b} are not supported.

The SLP does not have effect on the variance in IRP ranges, ($SD_{(SLP)} = 10.23$ versus $SD_{(no SLP)} = 11.20$). H_{2c} is not supported. Meanwhile, the SLP does not significantly moderate the effect of price dispersion on the

variance of IRP ranges, with $F_{(3, 154)} = 2.19$ (p = .09), but hypothesized direction of the effect can be observed. The effect of price dispersion on the variance of IRP ranges is smaller when the SLP is offered, as stated in H_{3c}. When the SLP is presented, the variance of the high price dispersion group is $SD_{(high PD)} = 11.30$, and the variance of the low price dispersion group drops to $SD_{(low PD)} = 8.71$ ($F_{(1, 77)} = 1.76$, p = 0.18). On the other hand, the price dispersion effect is more obvious without the presence of the SLP, from $SD_{(high PD)} = 12.52$ of high price dispersion to $SD_{(low PD)} = 8.74$ of low price dispersion ($F_{(1, 77)} = 4.52$, p = 0.04).
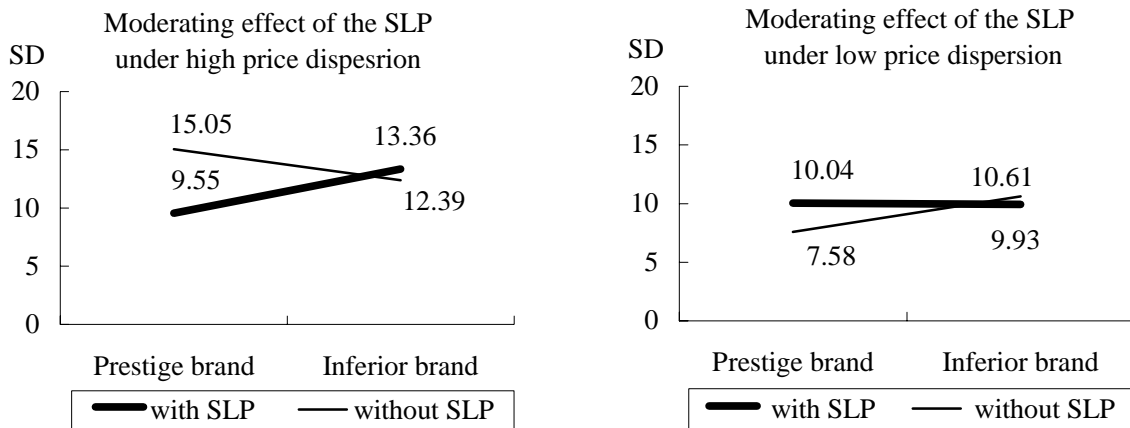
Figure 1
The Moderating Effects of SLP on the Effect of PD on the Variance of the Upper Boundary IRP

The Effect of Brand Image

For the variance of the upper boundary of IRP, the moderating effect of brand image in H_{4a} is not found ($F_{(3, 154)} = 1.51$). Brand image does not change the effect of price dispersion on the variance of the upper boundary IRP. Besides, the three-way interaction is not significant either ($F_{(7, 150)} = 1.74$, p=0.10), which does not support H_{5a}. However, the hypothesized direction in H_{5a} can be somehow visualized is Figure 2. In the situation of high price dispersion (Figure 2, left), the effect of the SLP is significant for the prestige brand ($SD_{(SLP)} = 9.55$ versus $SD_{(no SLP)} = 15.05$, $F_{(1, 35)} = 4.22$, p < 0.05) but not significant for the inferior brand ($SD_{(SLP)} = 13.36$ versus $SD_{(no SLP)} = 12.39$, $F_{(1, 37)} = 0.11$, p > 0.1). However, in the situation of low price dispersion (Figure 2, right), there is no significant difference in the moderating effect of the SLP. This suggests that the SLP helps to reduce the effect of high price dispersion on the variance of the upper boundary IRP, and it is more effective for the prestige brand. However, the SLP and brand image do not have strong effects in a low price dispersion situation; this can be a result of a ceiling effect when no huge IRP variance is created by low price dispersion.

Figure 2
Three-way Interaction on the Variance of the Upper Boundary IRP

For the variance of the lower boundary IRP and IRP range, none of the main or interaction effects are found. Hypotheses H_{4b}, H_{4c}, H_{5b}, H_{5c} are not supported in this study. That is, the effect of brand image on these two variables cannot be found.

Extra Findings
        In general, the variance of the low boundary IRP is hardly influenced by price dispersion, the SLP, or brand image. However, the insignificant results regarding the variance of the lower boundary do not imply that the lowest points of an IRP cannot be repositioned. Extra findings show that the means of the lower and upper boundaries of an IRP are changed under different price dispersion situations. The results show that high price dispersion brings down the lower boundary of a respondent's IRP, Mean$_{(high PD)}$ = 73.79 versus Mean$_{(low PD)}$ = 77.43 with $F_{(1, 156)}$ = 6.84 ($p<0.01$); but the SLP has no impact on this price level. It is interesting that the findings concerning the upper boundary of an IRP are quite the opposite. While price dispersion has no effect on the upper boundary of an IRP, the SLP is found to raise this price point, Mean$_{(SLP)}$ = 97.91 versus Mean$_{(no SLP)}$ = 93.96 with $F_{(1, 156)}$ = 4.62 ($p < 0.05$), which can be simply attributed to the fact that the SLP is closer to the highest market price. These contrary findings illustrate that price dispersion has greater effects on the lower boundary of an IRP whereas the SLP has stronger influences on the upper boundary of a consumer's IRP.

Conclusion and Implication

        The boundaries and range of a consumer's internal reference prices (IRP) can influence consumers' purchase decisions. It also influences the efficiency and effectiveness of marketers' price promotions and pricing strategies. This study focuses on how the price dispersion in the market, suggested list price (SLP), and brand image have effects on consumers' IRPs, especially the variance of IRPs, which reflects the inconsistency of consumers' price perceptions.

Major Findings and Discussions
        The findings of this study illustrate that the effect of price dispersion on a consumer's IRP is substantial. High price dispersion enlarges the variance of an IRP range and raises the upper boundary of an IRP. These facts imply that the inconsistent price information does confuse consumers and results in diversified price perceptions. For the same product, the price standard varies in a consumer's mind; some of them are more constricted while others are more relaxed.
        On the other hand, high price dispersion also pulls down the lower boundary of an IRP, as predicted by Range Theory. Previous studies have explored the effects of market price range on consumers' price perceptions (Janiszewski and Lichtenstein 1999; Niedrich et al. 2001). The effect of price dispersion discovered in this study further verifies that the range of market prices is more influential on the lower boundary of an IRP, rather than on the upper boundary.
        Compeau et al. (2004) found that consumers' perceptions toward the SLP are mixed. However, the SLP as

an anchor of the highest price does provide some interesting results on consumers' IRPs in this study. Although the SLP cannot directly reduce consumers' inconsistency of price perceptions, the directionally supported result shows that the effects of high price dispersion on the variance of an IRP's range and upper boundary may become smaller when the SLP is offered. In other words, the SLP may further reduce the negative impacts of high price dispersion. It can also increase a consumer's maximum acceptable price since it is usually higher than the highest market price.

However, both positive and negative sides of SLP on consumers' interests should be discussed. On the positive side, it exhibits the highest price standard for a product across all the retailers, and a stable price anchor for consumers to make the price comparison (Liefeld and Heslop 1985). Therefore, consumers' decision-making process can be simplified. Besides, consumers perceive savings from comparing the SLP with the selling price (Ahmed and Gulas 1982). Ideally, the re-pricing mechanism in the market should be initiated after the SLP is set, and then the high price dispersion may not persist in the long run. But the SLP may violate consumers' interests if the brand owners intentionally manipulate a higher SLP to raise the external and internal reference prices. Although several studies found ambiguous or no effects regarding manufacturers' SLP on consumers' perceptions of regular prices (Ahmed and Gulas 1982; Compeau et al. 2004; Grewal and Compeau 1992; Liefeld and Heslop 1985), it indeed raises their upper boundary of the acceptable price in our findings. Therefore, the deceptive SLP should be regulated by the policy if the SLP is manipulated unreasonably over the average market prices.

This study also found a directional support of the reducing effect of the SLP on price dispersion to be stronger for prestige brands than for inferior brands. In a high price dispersion market, the upper boundary of a consumer's IRP is more consistent (i.e., less variance) when the SLP is offered by a prestige brand. The reliable and creditable image of a prestige brand carries more reference value, which can make the SLP more effective and reduce more negative impacts from high price dispersion.

However, the brand image has no direct effect on the variance of an IRP in this study, which is somehow different from previous studies. A positive relationship between the IRP and brand image was found in previous research, which used the expected prices for an IRP (Biswas and Sherrell 1993; Grewal et al. 1998a). Brand image may have more impacts on the expected price because it is the expectation of market normal prices, which represent the price position of a brand.

Implications for Policy Makers

Since high price dispersions do confuse consumers and may cause inefficient purchases, policy makers need to investigate and monitor the variance of market prices. When the variance is large across stores in an area, consumers have the rights to acquire sufficient price information through the market price reporting system or the *Consumer Reports*. All of these not only help to reduce the high price dispersion, but also save consumers' time and efforts for price comparisons.

Although the SLP helps to reduce the negative impact from the high price dispersion, it cannot be ignored that some brand owners manipulate the SLPs to raise the reference prices. Policy makers should closely monitor the gap between the SLP and the highest market price to prevent this deceptive reference price.

Implications for Brand Owners

The effects of price dispersion found in this study are actually considered negative from a brand owner's point of view. Marketers usually do not like that consumers perceive the market price of a product differently, which makes the benchmark of consumers' price judgments hard to estimate. A lower minimum IRP may make consumers easily perceive the market price too expensive and pause the purchase decision. Consequently, it forces marketers to engage in heavier price promotions. Therefore, checking regional retailing prices regularly are necessary to prevent or reduce the high price dispersion. The findings also encourage brand owners to provide the SLP to consumers when the prices of a product vary dramatically in the market. This marketing tactic helps to restructure a consumer's price judgmental scale and provokes more stable price perceptions. Brand owners are suggested to take precautions by using extra marketing tactics to control the range of the IRP or, better yet, to bring up the lower boundary of an IRP. The results of the current study further suggest an important price related issue: the interests of brand owners and retailers are sometimes contradictory. Retailers tend to apply price promotions on prestige brands since low prices lure consumers. However, brand owners would like to keep a relatively stable market price for the product in most of the outlets to maintain the price and image position. Brand owners should keep monitoring the market prices and keep the price competitive at the same time. For the interests of consumers, they gain more from the price promotion, no matter that is issued by retailers or brand owners. However, frequent price discounts may result in the devaluation of the brand image, and then consumers receive less from the psychological reward of the brand image.

<u>Suggestions for Future Researches</u>

High price dispersion is an issue of inconsistent price information, which increases the information processing loading for decisions.   However, its effects may differ over products and purchase frequency.   Besides, the consumer's IRP is influenced and reshaped by many factors; each marketing event can re-establish the consumer's IRP for the next purchase.   Also, consumers usually encounter the various market prices at different outlets and at different times in the real market.   The memory effects, such as recency or primacy effects, may influence the construction of an IRP.   It is worthwhile to conduct a longitudinal study to explore the temporal and memory effects on this issue.   If high price dispersion in a market persists for a long time period, consumers may begin to distrust the SLP.   Moreover, the design of this study is to keep the average price and vary the price range to represent price dispersion situations.   It will be interesting to know the effects on a consumer's IRP if the price range is fixed but manipulating the variance of market prices.

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