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**Consumer Attitudes and Automotive Transactions**

- The Difference Between New-Car and Used-Car Markets in Japan-

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October 2004



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## **Abstract**

This paper examines possible impacts of changing consumer attitudes in the advent of new information and communication technology on the resulting terms and conditions of automobile transactions, through integrating a used-car market and a new-car market studies coherently. We find that consumers who are active in information gathering and terms-of-trade negotiation are able to obtain larger price discounts of new cars and higher trade-in or sell-off price of their own cars. There is synergy between Internet usage and active information gathering. However, data also reveal limited rationality on the side of consumers: their negotiation strategy (hard-pressing on new car prices but less aggressive on sell-off prices) is suboptimal. Also, even though we are in an information age, human factors are shown to be very important in negotiation.

## **Keywords**

consumer attitude

information and communication technology

new-car markets

used-car markets

synergy

limited rationality

survey analysis

# **Consumer Attitudes and Automotive Transactions<sup>1</sup>**

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## **1. Introduction**

The Japanese automobile market reached a turning point early in the 1990s. After so-called “Bubble Economy” burst around 1990, domestic new-car sales changed gears from an upward trend to a stagnant or even a downward one. At present, the market is thus in a matured or saturated stage. Market maturation or even saturation is likely to change the working of the market profoundly. The days of quantitative growth are over, which were fueled by young car buyers entering the market. Automobile producers and dealers are now face a stiff competition among them to attract consumers who know the market very well.

Casual observations suggest consumers are more and more sensitive to prices, as well as product characteristics and quality. Newspapers and magazines often report that consumers seem to become more and more information-sensitive. Proliferation of various informational

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sources signifies this trend, ranging from car-price magazines to homepages of dealers and manufacturers. There are also anecdotes that some consumers have become very negotiation-intensive: that is, some are becoming tougher negotiators to get good terms and conditions. A natural presumption based on these observations is that consumers who are active in both information gathering and negotiation get good terms and conditions. On the other side of the same coin, this means that manufacturers and dealers have to cope effectively with these active consumers in order to stay profitable.

The first purpose of this study is to examine possible impacts of these changing consumer behavior and attitudes on the resulting terms and conditions of automobile transactions. To our knowledge, there is no empirical study of this kind before our study.<sup>2</sup> The lack of research on this subject is clearly unsatisfactory from the viewpoint of manufacturers and dealers since such information is absolutely necessary to effectively deal with these increasingly sophisticated consumers. Such information is also needed for consumers to improve their strategies for getting good results.

The second purpose of this paper is to integrate a used-car market study and a new-car market one into one coherent study of automobile markets. As explained earlier, the Japanese automobile markets have matured. One important implication of this maturation is that many new-car buyers are also sellers of their then-owned cars at the same time. It is natural to assume that in such an integrated market of new and used cars, car buying behavior and own-car selling behavior are interrelated in a complicated manner. Unfortunately however, there are no studies that explicitly take this interrelationship into account. This study is the first attempt to fill this huge gap in the literature.

Addressing this hole in the literature is especially important in the context of the Japanese automobile markets. In Japanese used-car markets, a new business format has emerged since early 1990s, which specializes solely in purchasing used cars from consumers. For many years, Japanese consumers had no alternative to trading in their then owned cars for new ones at new-car dealerships. However, these "purchasing-only" outlets have changed this old custom in an important way. This change can be interpreted as one way of "modularization" or "de-coupling" in which trade-in-negotiation processes are separated from new-car-selling negotiation processes.

This is clearly a sign of the growing trend of unbundling and modularization in the automobile retail industry. It is of utmost importance to investigate how consumers react to this new trend.

This paper is organized as follows. In Section 2, we briefly describe two surveys we

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<sup>2</sup> Scott Morton et al. (2001) analyzed the effect of online referral services on prices. However, there are very few researches investigating the effect of behavioral and attitudinal factors on prices.

conducted in 2001 to discern the effects of consumers' information-gathering activities and negotiation intensity on the terms and conditions of their automobile transactions. There we carefully examine whether our samples are representative of Japanese customers, and if they are not, investigate what kind of biases are present in our sample. In this way, we can infer about Japanese consumers in general in less biased ways. Then, we investigate the effects of information gathering and negotiation intensity on price discounts in new-car markets (Section 3) and on trade-in or selling-off prices in used-car markets (Section 4). In Section 5, we further examine the effects of the Internet. Finally, we conclude the paper in Section 6, with discussion about the major findings of this study.

## **2. New-Car Buyers and Own-Car Sellers in Two 2001 Automobile User Surveys**

### **2.1. Automobile User Surveys**

In this paper, we examine the possible effects of consumers' attitudes and behavioral patterns on consumers' success in getting better terms and conditions in the purchasing of new cars and in the selling of their then-owned cars. In particular, we investigate whether consumers effectively employ available means to achieve this goal. Since the development of information and communication technology (ICT) culminating in the advent of the Internet is the most notable change in consumers' environment,<sup>3</sup> we also investigate the effect of the Internet on consumers' behavior, especially its ultimate effect on consumers' ability to get better terms of trade.

To discern car-buying and car-selling behavior of Japanese consumers, we use the results of two interview-based surveys designed and implemented in 2001 under the supervision of the authors. The first one is a survey conducted in March jointly with Japan Automobile Dealers' Association, which contains survey questions about new-car buyers to examine new car buying behavior. The second one is a survey conducted in September jointly with Gulliver International, Inc., which contains survey questions about consumer behavior regarding the selling of their then-owned cars. The Nippon Research Center (NRC) implemented these two surveys under the supervision of the authors.<sup>4</sup>

Table 1 shows major survey items in these questionnaires, except for general demographic items such as age, sex, annual income, education, type of occupation (blue-collar or white collar) and so on, which are not shown to save space. Also there are several questions specific to only one of the surveys, as indicated accordingly. It should be noted here these surveys contain more information than we used in this paper. For example, the March survey, coupled with earlier surveys, was used to examine changing attitudes of automobile owners before and after the advent of the Internet (Morita and Nishimura 2002).

### **2.2. Identification of New-Car Buyers and Own-Car Sellers in the Surveys**

In order to get a picture of Japanese consumers that is as unbiased as possible, we proceeded in the following way. At the outset, we specified the target of our study (that is, the "population" in statistical terminology) as "Japanese private automobile drivers with valid licenses, nationwide except for Okinawa". We then used the following three-step method to get relevant samples from this population.

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<sup>3</sup> See, for example, Nishimura and Morita (2002).

<sup>4</sup> They were partly based on NRC's Automobile Owners Omnibus Survey data bank.

The first step was to apply a multi-stratified, two-stage<sup>5</sup> random cluster sampling method based on resident registration records of local governments. Using this method, we obtained 6,600 samples in 600 sampled areas. These samples, however, might not be automobile drivers with valid licenses.

Consequently, in the second step, we randomly chose 2,000 automobile drivers from among all of the automobile drivers in the 6,600 samples, and attempted to interview them twice. First, interviews were conducted between March 12 and 23, 2001. Then, interviews were conducted between September 10 and 21, 2001. However, not all of 2,000 chosen samples cooperated in our surveys. The number of respondents was 1,496 (74.8%) in the March survey and 1,493 (74.7%) in the September survey. However, from past experience, we deemed it reasonable to assume that there was no significant sample bias caused by this procedure we used since the non-response was rather random.<sup>6</sup>

The main purpose of this study was to examine how consumers' attitudes and behavioral patterns toward car buying and car selling would affect price discounts of new cars and selling prices (or trade-in) prices of their own cars. Thus, we should control, in particular, the market value of the cars in question in our study, since buying and selling prices are likely to be highly correlated with the market value, regardless of consumers' attitudes and efforts in car buying and selling. We used the *Yellow Book*<sup>7</sup> for relevant price information of the market value of particular cars in question. The *Yellow Book* contains price information about the wholesale price of used cars among dealers. It should be noted that the *Yellow Book* is mostly concerned with mainstream used cars. It does not cover imported models and models of limited sales quantity, since there is an insufficient number of transactions for these models making price data unreliable.

Taking these facts in mind, we proceeded in the following way in the third step.

For new car buyers, we first removed from our samples those who did not buy a new car in the first place and those who failed to report about price discounts in the March survey (which contained questions about new car buying behavior). We then picked up only those respondents whose cars were listed in the end-of-the-year *Yellow Book* for that year. Among 1,494 respondents in the March survey, 1,148 bought a new car, and among them 835 reported about price discounts. They are the base samples of our analysis of new-car buyers. Among these 835 base samples, *Yellow Book* prices were available for 516. We call them the mainstream samples, since the *Yellow Book* reports prices of only mainstream models. Thus, the number of

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<sup>5</sup> The first stage is among regions and the second stage is among cities.

<sup>6</sup> The survey is conducted regularly under the sponsorship of Japan Automobile Dealers' Association. There has been no evidence indicating that this procedure has serious sampling biases.

<sup>7</sup> The *Yellow Book* is published by Japan Auto Appraisal Institute. Unfortunately however, they have not been made electronically accessible, especially for earlier issues. Thus, we were obliged to gather this price information manually, scanning over pages of the publication each year.

mainstream samples was 516 in our analysis of new-car buying behavior.

As for own-car sellers, we removed from our samples those who did not report selling prices of their then-owned cars in the September survey (which contains questions about own-car selling behavior). We then picked up only those respondents whose cars were listed on the *Yellow Book*. Among 1,493 respondents in the September survey, 823 reported selling prices. They are the base samples of our own-car-selling behavior study as in the new-car buyer case. Among them, *Yellow Book* prices were available for 496. Thus, the number of mainstream samples was 496 in our analysis of own-car selling behavior.

### **2.3. No Noticeable Sample-Selection Bias in Our Samples of New-Car Buyers**

Let us now turn to the issue of whether the procedure explained above leads to a relatively good representation of Japanese new-car buyers and own-car sellers.

In Table 2-1, we examine whether our base samples of new car buyers (835 who reported about price discounts) are in any way different from the rest (313 who did not report about price discounts). We pick sex, size categories of their cars (which are strongly correlated with income levels), Internet usage, and PC usage (which are strongly correlated with education levels). We conducted Pearson's chi-square test to determine whether there is significant difference between the two groups for each item. The term P in this table indicates the significance level.

Table 2-1 shows that there is no noticeable bias in our sampling procedure and our samples of new car buyers are a good representation of new car buyers in Japan. In all items we selected, none shows statistically significant difference between our samples (those reported about price discounts) and the rest of the samples.

### **2.4. A Bias in Our Samples of Own-Car Sellers Toward High-Income High-Education Segments**

As for our base samples of own-car sellers, it turns out that there is a sample selection bias toward high-income, high-education segments. To see this, we conducted the same procedure as in the previous sub-section to own-car sellers. Table 2-2 reports the result.

This table shows that those in our base samples who reported their selling prices earn consistently higher income and have higher education than those outside our samples who did not report about selling price. Our base samples have larger cars (surrogate of higher income) and their usage of the Internet is higher (surrogate of higher education). Although it is not statistically significant, the percentage of PC usage is also higher among them.

These results show that, while our base samples of new car buyers has no noticeable bias, our samples of own-car sellers are somewhat biased toward high-income high-education segments of the population. We should keep this property in mind in interpreting the following analysis.

Finally, Table 2-3 compares new-car buyers and own-car sellers in our samples. As expected, these two samples are different. Own-car sellers have larger cars (surrogate of higher income) and a higher usage of the Internet and PC (surrogate of higher education).

### **2.5. Market Value Evaluation**

There is one important addition to our data set of the survey results, which is the market value of the same used cars models. As explained briefly before, a consumer's selling price of his own car should depend on the market value of the same used car model, so long as consumers use price information effectively. Moreover, price discounts on new cars should reflect the magnitude of "overpricing" in manufacturer's suggested retail price (hereafter we call it MSRP) over the "true market value," which should be reflected in the market value of used cars of the same model in the following year, again so long as consumers use price information effectively. Thus, we expect the market price of same-model used cars should be an important determinant of both price discounts in new-car buying and selling prices in own-car selling.

As explained earlier, we use the *Yellow Book* for this purpose. In the new-car buying study, we employ the average price of each model, between the maximum and the minimum of all grades of the same model, in the end-of-the-year issue of the *Yellow Book* of one year after purchase. In the own-car selling study, we use the average price of each model, between the maximum and the minimum of all grades of the same model, in the end-of-the-year issue of the *Yellow Book* of the year a particular car was sold.

An appropriate measure of getting good terms of trade is the size of price discounts in new-car buying and the level of the selling prices in own-car selling. Consequently, we regress price discounts and selling prices on behavioral and attitudinal characteristics, to examine their effects on the outcome of negotiation. As clarified later, we put a special emphasis on information gathering and negotiation tactics.

### **3. Consumer Behavior and New-Car Price Discounts**

In order to investigate the effects of behavioral and attitudinal characteristics of a consumer on price discounts in new car buying, we proceed in the following way. As usual, we assume a linear model of price discounts in which behavioral and attitudinal characteristics as well as the market value determine price discounts. We then use a so-called “iterative variable-reduction method.” In this procedure, we first put all relevant variables (of which the list is shown in Table A.1 in the Appendix) as explanatory variables in the regression. We then drop the least significant variable one by one, until only statistically significant variables with at least a 10% significance level are left in the regression.<sup>8</sup> However, there is one exception, which is the market value variable. We use the difference between MSRP and next-year-end *Yellow Book* price (YB\_SA\_AV) of the same model as its market value, and keep it no matter whether it is significant or not for theoretical reasons explained earlier.

#### **3.1. Market Value**

Table 3 reports the result. First and the most striking finding is that the market value variable YB\_SA\_AV is not at all significant. Since in theory it should have a strong effect on the size of price discounts, this finding is very perplexing. If consumers use price information effectively, then price discounts should be just another way of price reduction. If demand is short of supply, then the price should go down and thus price discounts should go up. However, the result reported in Table 3 defies this economic reasoning.

#### **3.2. Information Gathering**

Let us now turn to information gathering. Table 3 confirms our prior conviction that active information-gathering increases price discounts while mere passive information-gathering decreases them, other things being equal. Information gathering intensity (I205), active information gathering in the form of going to exhibitions and test driving (I207\_05) and the usage of third party information (I209\_02) increase price discounts. In contrast, passive information gathering of reliance on direct mail and brochures of dealers (I1209\_04) reduces price discounts, other things being equal. It should be noted that this table does show the effect of consumer behavior but does not show whether these particular practices increase nor decrease price discounts. The table indicates that consumers who tend to employ these tactics obtain the reported results.

#### **3.3. Negotiation Tactics**

With respect to negotiation tactics and intensity, we also get results confirming our

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<sup>8</sup> This procedure is carried out by SPSS version 10.0.7J.

presumption that the more intensively consumers negotiate, the more price discounts they get, except for one category discussed later. The more frequently consumers negotiate both in the dealership (R101) and away from the dealership (mostly at their home, R011), the more price discounts they get. The longer they negotiate, the more concession they obtain (R012).

There is one exception in the above characterization. An aggressive attitude toward negotiation does not increase but rather decreases the concession. If a consumer uses a very aggressive tactic of making not only salespersons but the manager of the dealership get involved in negotiation (I212\_06), which is a very aggressive tactic under the Japanese standard, the consumer rather gets a negative result when other things are controlled to be equal. To put it differently, *although information empowers consumers, their aggressiveness may backfire*.

This attitudinal effect may be closely related to the effect of human touch appreciation. The Table also shows that consumers who appreciate salespersons' active involvement in finding out the best-suited car get a larger discount (I220\_08). Together with the point we made in the previous paragraph, this may show the importance of human factors in getting good results, which are often overlooked in the theories of economics.

### **3.4. Involvement Factors**

The effects of involvement in cars have rather mixed results. When consumers are highly involved in cars and car styling (I198\_4) and determine a particular model to buy well in advance (I198\_1), they get a good discount. However, if the consumer has simply a high general interest level in cars (I223) and thinks attractive sedans are now available to buy in the market, he obtains a negative result.

These rather mixed results can be explained in the following way. Consumers who care about styles specific to particular models are more motivated than consumers who compare merely functions and options among various models. A similar characterization applies to consumers who determine a particular model to buy well in advance. It is quite natural to assume that motivated consumers are keener to get good results, both financially and product-wise (that is, options etc.).

The reason that those who are motivated to buy through the release of new attractive sedans fail to get attractive discounts, may be specific to the Japanese automobile markets. In recent years, mass-marketed sedans are the most inexpensive compact sedans so that price discounts are relatively small in the first place. Moreover, price discounts are slim immediately after new release of new models. Since those responding that the release of new attractive sedans motivated them to buy are likely to have purchased just after the release, the price discounts they get are rather small.

**3.5. Mini-car Factors.**

Finally, manufacturer-specific dummies, Suzuki (I410\_2) and Daihatsu (I410\_3) show a negative sign. This can be interpreted as referring to the relative size of price discounts on “mini-cars”, which are the main product lines of Suzuki and Daihatsu. Honda also has mini-cars in its product line, so that statistically weakly significant negative result for the Honda dummy may conform to the above result with respect to Suzuki and Daihatsu. The size of price discounts is smaller for mini-cars, which generally have lower prices.<sup>9</sup>

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<sup>9</sup> Mitsubishi, Mazda, Subaru, and other companies also have mini-car lines, but they do not have significant mini-car dummies.

#### **4. Consumer Behavior and Own-Car Selling Prices**

A similar procedure to the new-car buyer case is applied to the own-car seller case. We assume a linear model of selling prices in which behavioral and attitudinal characteristics as well as the market value determine selling prices of consumers' then-owned cars. We then use an iterative variable-reduction method, in which we first put all relevant variables (of which the list is shown in Table A.2 in the Appendix) as explanatory variables in the regression. We then drop the least significant variable one by one, until only statistically significant variables are left in the regression. As for the market value information, we use the average price of each model between the maximum and the minimum of all grades of the same model in the year-end issue of the *Yellow Book* of the year this particular car was sold (YEL\_AVE).

##### **4.1. Market Value**

Table 4 reports the result. First, in contrast to the new-car buyer case, the Yellow Book price is strongly statistically significant at the 1% level of significance. This result shows that trading-in or selling-off price of consumers' then-owned car properly reflected the market value. Moreover, the adjusted R square of this regression is much higher than that in the new car buying case. This clearly suggests that own-car selling prices were much more systematic and predictable than new-car price discounts.

##### **4.2. Interference of Buying in Selling?**

There is another remarkable result in this table about a consumer who simultaneously buys a new car and sells (or trade in) his then-owned car. The table shows an intriguing result that the buyer-seller who eagerly gathers information about price discounts of new cars sells his then-owned car for a lower price (Q4\_2). Similarly perplexing is the finding that the longer it takes from the start of negotiation to its closing, the lower is the selling or trade-in price (Q5-2). This is in sharp contrast to the fact (O4\_3) that the buyer-seller who is eagerly seeking information about selling prices of his then-owned car is able to sell it for a higher price. We will discuss implications of this finding in Section 6 in more detail.

##### **4.3. Information Gathering**

Let us now consider the nature of information gathering activities. As in the new car buying case, active information gathering rewards a consumer whereas passive one does not. Information gathering through third-party informational sources such as journals and newspapers (Q4\_6\_2) leads to a higher selling price. In contrast, passive one such as perusing manufacturers' homepages (Q4\_4\_11) and getting information from TV and radios (Q4\_6\_1) correlates negatively with the selling price.

In the same token, consumers who are more active in seeking wider selling venues are rewarded substantially. Selling their own cars to dealers or outlets other than the dealer from which they buy their new cars leads to a higher selling price (Q8\_4). Similarly, consumers who obtain other dealers' price quotes of their own car get a higher selling price (Q10\_1).

#### **4.4. Negotiation Tactics**

As for negotiation tactics, findings are largely consistent with our prior expectation of a strong correlation between active negotiation and high selling prices. As expected, the more a consumer negotiates about trade-in prices, the higher is the trade-in price (Q13\_2). In contrast, passive negotiation leads to a lower selling price. A consumer who responded to the question of what is the "reason to adopt the particular way of selling one's car" by stating that "do not know other ways" ends up with a lower selling price (Q9\_6).

With respect to the effect of appreciating human touch, we find the same result as in new car buying. A consumer who responded to the same question by stating that "employees of the company are reliable" obtained a higher selling price, indicating that a positive attitude toward human touch is an important behavioral characteristic in getting good results even in own car selling.

#### **4.5. Attitudes toward New Venues**

Next, let us consider the attitudinal difference among consumers with respect to new selling venues of used-car-buying companies and the effect of this difference on selling prices. Consumers who responded to the question of why they do not use such venues by stating "trade-in price becomes higher when it is combined with new-car price discounts" (Q22\_1) have a higher selling price. This attitude is quite reasonable, and the result is not surprising. In contrast, consumers who responded to the same question in a not so reasonable way such as by stating that they "have an acquaintance in the dealer" (Q22\_4) and "do not know its system" (Q22\_7) are unable to obtain discounts.

#### **4.6. Internet usage**

Unlike new car price discounts, Internet usage has a significant effect on own car selling prices (INET). We will discuss this issue in more detail in Section 5.

#### **4.7. Other findings**

In Table 4, we find that consumers in their teens and twenties (F2\_2\_2), living in the central part of Japan (I401\_3), and owning mid-size (F13\_2\_2) and RV (F13\_2\_5) obtain a higher selling price. These findings are consistent with the fact that (1) young consumers have more

time and energy to negotiate intensively than older generations, (2) competition is fiercer in the central part of Japan, especially in Aichi prefecture where Toyota's headquarters is located, and (3) mid-size cars and RVs are more popular than other car types in used-car markets.

The table also shows that consumers obtain a high selling price who responded to the question about the “reason to adopt the particular way of selling one's car” with the statement that a “good price is expected (Q9\_4).” Similarly, consumers who respond to the question of purchase motivation by stating attractive trade-in price (Q2\_9) also get high prices. This may indicate that they have enough information backing their prospects and thus their selling price is actually high. In contrast, those who urgently need a car because of an accident (Q2\_7) obtain lower selling price simply because of devaluation caused by these accidents.

## **5. Effects of the Internet**

In this section we examine in more detail how the Internet affects new car buying and own car selling behavior. The following Table 5 shows the difference between Internet users and non-Internet users with respect to the size of price discounts and the level of selling prices.

This table shows a clear difference between new car buying and own car selling. We see very little difference between Internet users and non-Internet users in new car buying while we find a sizable difference in own car selling. This is consistent with the regression results of the previous sections. We have put an Internet usage dummy and have examined its effect on the level of price discounts and selling prices. As explained earlier, the Internet dummy has been shown to be insignificant in new car price discounts, but strongly significant in own car selling prices.

In this section, we go further and ask whether Internet usage strengthens or weakens individual effects of explanatory variables. A natural way to investigate this issue is to put a cross-term of each explanatory variable and the Internet usage dummy in the regression. Thus, we put these cross-terms into the regression equations of Sections 3 and 4, and examine the direction of their effects and their statistical significance.

### **5.1. No Effect of the Internet in New Car Buying**

Table 6 shows the result in the case of new car buying. As evident in this table, there is no statistically significant individual effect of Internet usage. All cross terms are insignificant. Thus, the results obtained so far suggest that, as of March 2001, the Internet was not yet a dominant factor in changing Japanese new car markets. This is a sharp contrast with the U.S. new car markets, where the Internet was and is a decisive factor in price negotiation.

### **5.2. Synergy between Internet Usage and Active Information Gathering**

In contrast, Table 7 shows the Internet has become an important factor in own car selling in a way specific to Japanese market conditions. It should be noted that, as of September 2001, the Internet in Japan was at most a new source of information rather than a new venue of transactions. Thus, the difference between Internet users and non-user is simply the amount of accessible information. As it has been shown in Section 4, own-car selling prices reflect the market value systematically. This suggests that Internet-using active information-gathering activities are effective in own-car selling.

Although Internet users had an informational advantage over non-Internet users, they after all have to visit actual brick and mortar stores to sell their cars. This suggests a deeper hypothesis that, Internet usage could make a difference only if it is coupled with active information gathering and negotiation. Table 7 confirms that this is the case.

In fact, Table 7 reveals that, the fact that the consumer obtains a higher selling price when he sells to a dealer other than the dealer from whom he buys a new car, is for Internet users and not for non-Internet users (Q8\_4 and INET\*Q8\_4). Internet users have a large, significant coefficient of Q8\_4, but this is offset by INET\*Q8\_4 for non-Internet users and ends up with a negligible coefficient. These results support our hypothesis.

The result with respect to the question of why consumers do not use a new selling venue of used-car buying companies also confirms our hypothesis. Internet-using consumers who responded this question by stating “do not know its system” are unable to obtain a higher selling price (Q22\_7), while this effect is offset by INET\*Q22\_7 substantially for non-Internet using consumers. Internet usage makes a difference again only if it is coupled with active information gathering.

### **5.3. Hearsay Information and Non-Internet Users**

Table 7 also suggests, though vaguely, another difference between Internet users and non-Internet users with respect to passive information gathering. In contrast to Internet users, non-Internet users are far less informed about the market, and are likely to be heavily dependent on the information of the salespersons they know. Through these salespersons they obtain information and form expectations about the market. From this perspective, it is not a surprise to find in Table 7 that those non-Internet users who obtain a higher selling price are those who expect a good price (INET\*Q9\_4), while this has no effect for Internet users, who depend on active information gathering rather than passive information from salespersons (Q9\_4).

### **5.4. Trade-off between Information Gathering and Intensive Negotiation**

Finally, In Section 4, we obtained a perplexing finding that the longer it takes from the start of negotiation to its closing, the lower is the selling or trade-in price. Table 7 shows that this is the case for Internet users (INET\*Q5\_2) but not for non-Internet users (Q5\_2 and INET\*Q5\_2). Since Internet users are supposedly those who engage in active information gathering, this result suggests that there is a trade-off between information gathering and intensive negotiation, which we will discuss in the next section.

## **6. Discussion and Conclusion: Attitudinal Differences and Limited Rationality in Consumer Behavior**

### **6.1. Summary of Results: Consumers' Attitudinal Differences and Automotive Transactions**

The results of regression analyses explained in the previous three sections largely confirm our hypothesis that attitudinal and behavioral differences among consumers matters substantially in obtaining price discounts in new car markets and getting higher trade-in or selling-off prices in used-car markets. Generally speaking, we find that consumers who are active in information gathering and terms-of-trade negotiation are able to obtain better results (larger price discounts of new cars and higher trade-in or sell-off price of their own cars). Moreover, we find a significant effect of the Internet in used-car markets, both on the level (Section 4) and individual effects of the explanatory variables (Section 5). This suggests the existence of synergy between Internet usage and active information gathering, although there is a caveat of a sample selection bias in our used-car samples toward high-income, high-education segments of consumers.

Thus, to put in a nutshell, we found that consumers' attitudinal differences do matter in their effectiveness in price negotiation. This implies there is room for a business strategy of informational "divide et impera" (divide and rule): if firms can segment their consumers with respect to their attitudes toward buying and selling, they can get better terms of transaction conditions to improve profitability. This attitudinal segmentation has not been explored before. As free information about automobiles becomes increasingly wide-ranged so that informational segmentation is increasingly difficult, attitudinal segmentation is likely to become a more attractive alternative.

### **6.2. Consumers' Rationality May Be Limited In Getting Better Prices in New Car Buying**

Among the results obtained so far, the most striking finding is that new-car price discounts had no correlation with the difference between new cars' MSRPs and their market values, even though own-car selling prices are closely correlated with the cars' market values. If consumers use price information effectively, both new-car price discounts and own-car selling prices should be dependent on the market value of a particular car. This suggests that a striking difference exists between new-car markets and used-car ones. Thus, consumer behavior in new car markets shows a sign of limited rationality, even though consumer behavior in used-car markets is consistent with full-fledged rationality.

### **6.3. Consumers' Rationality Is Limited In the Choice of Tactics**

Equally perplexing is the fact that the choice of consumers with respect to tactics to get best

financial results does not seem fully rational.

For example, the more intensively a consumer engaged in information gathering about new cars he wanted to buy, the lower was his selling price of his then-owned car. To put it differently, seeking good terms in new car buying and seeking good terms in own-car selling were in a trade-off relationship in our samples of new car buyers. A similar result is found even in Internet users. Active information-seeking Internet users who at the same time adopted an intensive negotiation tactic of prolonging negation with salespersons and dealers, ended up in obtaining lower selling prices of their then-owned car.

To put the trade-off in a quantitative way, Tables 3 and 4 show that one more negotiation about a new car price increased price discounts by about 10,000 yen, while one more negotiation about the trade-in price increased the trade-in price by about 30,000 yen. Furthermore, if the consumer got quotes from other dealers and used-car buying companies then he could raise his selling price by about 100,000 yen. Taking account of these numbers, it is evident that to put more efforts on activities of getting higher selling prices pays far more than to obtain larger price discounts. Consequently, it is rather perplexing to see that consumers are eager to negotiate hard to get price discounts, rather than put more efforts in getting higher selling price of their own cars.

It is not certain that this limited rationality is a transitory phenomenon that may fade away as consumers get more and more sophisticated in gathering information and negotiating prices. However, there may be a possibility that consumers weigh new-car price discounts far more heavily than higher trade-in prices in their psychological calculations like consumers studied by Kahneman and Tversky. If this is the case, then it might be possible to construct a business strategy to take advantage of this trait of consumers.

#### **6.4. Implications for Business Strategy**

The main findings in this research are two points. One is that there is still a limit in consumer cognition and information processing capability in the information society. Another is that a marginal value of information processing capability still varies with each consumer. These findings suggest a possibility of strategies taking advantage of these traits of consumers.

When purchasing a new car, a consumer focuses his/her attention on new car buying and he/she puts rather less emphasis on the negotiation on terms and conditions of own-car selling. Thus, a dealer can earn profits from the trade-in process of a used car to which a new car buyer puts less importance. After all, he/she seems to obtain more satisfaction in new car discounts than high own-car selling prices. Consequently, the dealer can bundle the sales of a new car and a used car trade-in to satisfy his client and to earn profits. Actually, this strategy is often found among Japanese automobile dealers.

In the same token, an automobile dealer can segment the market according to differences in information processing capability among consumers. Some car buyers acquire abundant information from various sources and are quite positive towards tough negotiation, while others are not. In spite of rapid progress in information technology and its swift diffusion, the result of this research shows that the market is still far way from perfect information. In fact, contrary to the hope of some advocates of information technology, the Internet has actually widened information gap among consumers. Consequently, an automotive dealer can increase his/her effectiveness in dealing with his/her clients if he/she knows the amount of information and the negotiation power that his/her clients possess.

Sources of information that a buyer has may serve as a key. If a consumer appears fond of and contacts sources of information that require active gathering represented by the Internet, then the a possibility of this consumer having acquired more information is high. Then the dealer should adjust its selling strategy accordingly. In contrast, for the consumer who is mainly in contact with passive sources of information and the consumer who does a blind purchase from a traditional channel, the dealer can improve its image and at the same time earn profits by tailoring its selling strategy toward a more human-touch-oriented one, as we have amply showed in previous sections. This implies an importance of attitudinal segmentation we have argued before. For that purpose, the amount and sources of information can be a good predictor. Unfortunately to date, field sales persons are left to individually measure each customer's attitude to ward negotiation or "toughness". It may be possible to substitute for this inefficient heuristic approach to some extent simply by using systematic evaluation of the amount and sources of information contacted by each customer.

So far, two strategies were proposed above under the assumption that consumers' cognitive limitation is given. Then, there may be yet another strategy that changes this cognitive limitation of consumers, rather than taking it as given. It can be called an "unbundling" or "modular" strategy, an example of which is to separate the trade-in process from a new car sale. In fact, we have witnessed a successful entry of new business format that essentially performs this function, which is the so-called "used-car purchasing-only outlet". These outlets specialize in buying a used car from consumers by offering a higher price than can be obtained as a trade-in price. The service also simplifies the procedure of own-car selling.

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**Table 1: Survey Questions Revealing Buyer Attitudes**

Survey	Question
Common in two surveys	Where the respondent purchased the present car he/she possesses
Common in two surveys	Model name of the purchased car
Common in two surveys	Purchase motive of the particular car
Common in two surveys	How the respondent determined the particular model
Common in two surveys	Internet use at the time of car purchase
Common in two surveys	How the respondent sold his/her then-owned car
Common in two surveys	Choice of option parts
Common in two surveys	Need for customization of the car
Common in two surveys	Magnitude of involvement in purchasing the present car
Common in two surveys	Intensity of the information gathering efforts about products
Common in two surveys	Intensity of the information gathering efforts about price discounts
Own-Car Seller Survey Only	Intensity of the information gathering efforts about selling prices of the then-owned car
Common in two surveys	Sources of information in determining the list of candidate models
Common in two surveys	Sources of information in choosing the particular model
Own-Car Seller Survey Only	Sources of information in choosing the particular venue of selling then-owned
New-Car Buyer Survey Only	Selling price of the then-owned car
New-Car Buyer Survey Only	Amount of price discounts the respondent got
New-Car Buyer Survey Only	Actions taken to obtain the discount
Own-Car Seller Survey Only	Actions taken to obtain the higher selling price
Common in two surveys	Whether the purchase of the car was pleasant or not
Common in two surveys	Length of search period
Common in two surveys	Length of negotiation period
Common in two surveys	Number of negotiations
Common in two surveys	Length of one negotiation
Common in two surveys	Opinion on discounting practices
Common in two surveys	Satisfaction level with respect to the particular car
Common in two surveys	Satisfaction level with respect to the discount the respondent got
Common in two surveys	Level of interest in the car in general
Common in two surveys	Dependence on human sources of information
Common in two surveys	Kind of efforts most often made in purchasing the particular car
Common in two surveys	Internet usage
New-Car Buyer Survey Only	Willingness to use electronic commerce in purchasing a car

Note: See the text.

**Table 2-1. No Sample Selection Bias: New-Car Buyers**

	non-Reported N=313	Reported N=835	Significance Level
Sex (% of Male)	61.0%	61.4%	P>0.1
Size Category: Large	5.1%	6.3%	P>0.1
Size Category: Medium	24.3%	22.5%	
Size Category: Small	14.4%	17.1%	
Size Category: Mini	16.0%	17.6%	
Size Category: RV	40.3%	36.4%	
Internet Usage (%)	31.8%	32.7%	P>0.1
PC Usage (%)	41.8%	44.8%	P>0.1

Note: Authors' calculation.

**Table 2-2. A Bias Toward High Income High Education Segments: Own-Car**

	non-Reported N=446	Reported N=825	Significance Level
Sex (% of Male)	50.4%	62.8%	P<0.01
Income: nothing	23.6%	17.2%	P<0.01
Income: less than 2 million yen	22.8%	16.9%	
Income: less than 3 million yen	13.2%	12.4%	
Income: less than 4 million yen	13.7%	10.7%	
Income: less than 5 million yen	6.3%	11.1%	
Income: less than 7 million yen	10.4%	16.9%	
Income: less than 9 million yen	5.3%	8.1%	
Income: more than 9 million yen	4.6%	6.7%	
Education: - Junior high school	8.1%	5.0%	P<0.01
Education: Senior high school	51.6%	45.8%	
Education: Special school	8.7%	12.6%	
Education: Junior college	11.0%	10.4%	
Education: college -	19.5%	25.7%	
Size Category: Large	6.8%	7.3%	P<0.01
Size Category: Medium	32.7%	35.3%	
Size Category: Small	27.8%	24.5%	
Size Category: Mini	18.1%	12.8%	
Size Category: RV	12.2%	18.8%	
Internet Usage (%)	32.1%	39.1%	P<0.05
PC Usage (%) 46.8%	51.0%	P>0.1	P>0.1

Note: Authors' calculation.

**Table 2-3 Difference Between New Car Buyers and Own Car Sellers**

	New-Car Buyer N=516	Own-Car Seller N=496	Significance Level
Sex (% of Male)	62.6%	62.1%	P>0.1
Mode Income Level	n.a.	5 to 7 million yen	n.a.
Mode Education Level	n.a.	senior high school	n.a.
Size Category: Large	7.6%	6.7%	P<0.01
Size Category: Medium	24.8%	32.7%	
Size Category: Small	18.0%	25.6%	
Size Category: Mini	16.5%	13.1%	
Size Category: RV	33.1%	22.0%	
Internet Usage (%)	30.6%	39.1%	P<0.01
PC Usage (%) 41.1%	51.8%	P<0.01	P<0.01

Note: n.a. = not available

**Table 3. New-Car Buying: Effects of Behavioral Characteristics on Price Discounts**

Dependent variable = Amount of price discounts (in 10 thousand yen)  
 Method of Estimation: OLS, Number of samples = 516

Variable	Characteristics	Detailed Description	Coefficient (beta)	t-value	Significance Level
I197_02	Involvement in Cars	Purchase Motivation: Attractive sedan is launched	-5.999	-2.309	0.021 *
I198_1	Involvement in Cars	Determinants in model choice: Have decided the model well in	2.642	1.890	0.059 +
I198_4	Involvement in Cars	Determinants in model choice: Style	4.385	1.958	0.051 +
I205	Active Information Gathering	Information-gathering intensity about cars (5 point scale; 1: very passively -- 5: very actively)	1.117	1.923	0.055 +
I207_05	Active Information Gathering	Kind of information used in determining candidates: Exhibitions and test drives	3.160	2.106	0.036 *
I209_02	Active Information Gathering	Kind of information used in determining a particular model: Newspapers and journals	2.768	1.751	0.081 +
I209_04	Passive Information Gathering	Kind of information used in determining a particular model: D.M.s and brochures	-4.564	-3.155	0.002 **
I212_06	Active Negotiation: Aggressiveness	How to get good terms and conditions: Have the manager participate in negotiation	-8.504	-3.054	0.002 **
I220_08	Active Negotiation: Human Touch	Attitudes to Price Negotiation: Rather, dealers should look for the best car together.	3.681	1.895	0.059 +
I223	Involvement in Cars	Interest level about the car in general (4 point scale; 1: totally uninterested -- 4: very interested)	-2.370	-2.410	0.016 *
R010	Negotiation Intensity	Number of negotiations at the dealer store	0.813	2.064	0.040 *
R011	Negotiation Intensity	Number of negotiations outside the dealer store	1.248	2.695	0.007 **
R012	Negotiation Intensity	Length of one negotiation	0.069	2.910	0.004 **
<b>Other non-behavioral variables</b>					
I410_2	Manufacturer Specifics	Manufacturer: Suzuki	-6.141	-2.102	0.036 *
I410_3	Manufacturer Specifics	Manufacturer: Daihatsu	-11.483	-4.221	0.000 **
I410_9	Manufacturer Specifics	Manufacturer: Honda	-3.865	-1.668	0.096 +
YB_SA AV	Market Price Differential	New Car List Price minus Yellow Book Used-car Price of the model	0.001	0.494	0.621
Adjusted R square = 0.120, F = 5.121 (p < 0.001)					

+: P < 0.1, \*: P < 0.05, \*\*: P < 0.01

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**Table 4. Own-Car Selling: Effects of Behavioral Characteristics on Selling Prices**

Dependent variable = Selling price of own-car (in 10 thousand yen)

Method of Estimation: OLS, Number of samples = 496

Variable	Characteristics	Detailed Description	Coefficients (beta)	t-value	Significance Level	
Q2_7	Urgency	Purchase Motivation: Car damaged by an accident	-7.878	-1.994	0.047	*
Q2_9	Active Information Gathering	Purchase Motivation: Attractive trade-in price for old cars	11.274	2.660	0.008	**
Q4_2	Active Information Gathering	Information-gathering intensity about terms and conditions of new cars they buy (5 point scale: 1: very passively -- 5: very	-4.179	-3.076	0.002	**
Q4_3	Active Information Gathering	Information-gathering intensity about price assessment of the own car (5 point scale: 1: very passively -- 5: very	3.103	2.202	0.028	*
Q4_4_11	Passive Information Gathering	Kind of information used in buying new car: Homepage of manufacturers	-11.430	-2.080	0.038	*
Q4_6_1	Passive Information Gathering	Kind of information used in selling one's own car: TVs and radios	-14.555	-2.225	0.027	*
Q4_6_2	Active Information Gathering	Kind of information used in selling one's own car: Newspapers and journals	11.549	3.063	0.002	**
Q5_2	Active Negotiation: Aggressiveness	Days from starting negotiation to closing negotiation	-0.203	-2.807	0.005	**
Q8_4	Active Negotiation: Information-Oriented	Way to sell one's own car: sell it to other dealers	12.283	2.096	0.037	*
Q9_2	Active Negotiation: Human Touch	Reason to adopt the particular way of selling one's car: Employees of the company are reliable	6.242	2.087	0.037	*
Q9_4	Active Negotiation: Information-Oriented	Reason to adopt the particular way of selling one's car: Good price is expected	8.638	2.193	0.029	*
Q9_6	Passive Negotiation	Reason to adopt the particular way of selling one's car: Do not know other ways	-11.014	-2.320	0.021	*
Q10_1	Active Negotiation: Information-Oriented	How to get high price assessment of one's own car: Compare with other dealers'	9.886	2.760	0.006	**
Q13_2	Active Negotiation	Number of negotiations for selling one's own car: for those who negotiate car selling terms and conditions	3.322	2.925	0.004	**
Q22_1	Active Negotiation	Why not try to access to used-car purchasing-only companies: Trade-in price becomes higher when it combined with new-car price discounts	6.857	2.597	0.010	*
Q22_4	Passive Negotiation	Why not try to access to used-car purchasing-only companies: Have an acquaintance in the dealer	-7.835	-2.018	0.044	*
Q22_7	Passive Negotiation	Why not try to access to used-car purchasing-only companies: Do not know its system	-10.808	-2.713	0.007	**
INET	Internet Effect	Internet usage	8.919	3.122	0.002	**
Other non-behavioral variables						
F2_2_2	Age	Age: 10s and 20s	8.213	1.829	0.068	+
F13_2_2	Car Category	Size Category of purchased car: Medium	5.576	1.890	0.059	+
F13_2_5	Car Category	Size Category of purchased car: RV	13.748	3.865	0.000	**
I401_3	Area	Area: Chubu and Hokuriku	11.082	3.220	0.001	**
YEL_AVE	Market Price	Yellow Book average price	0.053	15.512	0.000	**
Adjusted R square = 0.564, F = 28.893 (p < 0.001)						

+: P < 0.1, \*: P < 0.05, \*\*: P < 0.01

**Table 5: Internet Users and Non-Internet Users**

INET	Mean	Standard Deviation	N
<b>Price Discounts (in 10 thousand yen)</b>			
0 = non-user	22.92	15.71	358
1 = user	21.03	14.74	158
Total	22.34	15.43	516
<b>Own-Car Selling Price (in 10 thousand yen)</b>			
0 = non-user	31.18	39.22	302
1 = user	40.99	45.62	194
Total	35.02	42.07	496

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**Table 6: Difference between Internet and Non-Internet Users: (1) Price Discounts**

Variable	Coefficient (beta)	t-value	Significance Level	95% Confidence Interval		Description
				Lower	Upper	
<b>Baseline = Internet Users   INET = 1  </b>						
Intercept	29.000	3.539	0.000	12.896	45.104	**
I197_02	-10.829	-2.474	0.014	-19.430	-2.229	* Purchase Motivation: Attractive sedan is launched
I198_1	5.887	2.243	0.025	0.729	11.046	* Determinants in model choice: Have decided the model well in advance
I198_4	-0.500	-0.126	0.900	-8.318	7.318	Determinants in model choice: Style
I205	0.553	0.487	0.627	-1.679	2.785	Information-gathering intensity about cars (5 point scale; 1: very passively -- 5: very actively)
I207_05	3.457	1.271	0.204	-1.888	8.802	Kind of information used in determining candidates: Exhibitions and test drives
I209_02	3.175	1.172	0.242	-2.149	8.500	Kind of information used in determining a particular model: Newspapers and journals
I209_04	-7.192	-2.754	0.006	-12.323	-2.060	** Kind of information used in determining a particular model: D.M.s and brochures
I212_06	-7.803	-1.823	0.069	-16.213	0.608	+ How to get good terms and conditions: Have the manager participate in negotiation
I220_08	3.729	1.095	0.274	-2.963	10.421	Attitudes to Price Negotiation: Rather, dealers should look for the best car together.
I222	-3.062	-1.742	0.082	-6.515	0.391	+ Satisfaction level about terms and conditions (4 point scale; 1: very unsatisfied -- 4: very satisfied)
I223	-0.373	-0.199	0.843	-4.057	3.312	Interest level about the car in general (4 point scale; 1: totally uninterested -- 4: very interested)
R010	0.282	0.297	0.767	-1.583	2.146	Number of negotiations at the dealer store
R011	0.857	0.870	0.385	-1.077	2.790	Number of negotiations outside the dealer store
R012	0.073	1.668	0.096	-0.013	0.160	+ Length of one negotiation
I410_2	-13.486	-2.499	0.013	-24.089	-2.883	* Manufacturer: Suzuki
I410_3	-6.034	-1.252	0.211	-15.504	3.436	Manufacturer: Daihatsu
I410_9	2.174	0.493	0.622	-6.490	10.837	Manufacturer: Honda
YB_SA_AV	-0.004	-1.113	0.266	-0.010	0.003	New Car List Price minus Yellow Book Used-car Price of the model
<b>Difference of Non-Internet Users   INET = 0   from Internet Users   INET = 1  </b>						
[INET=0] * Intercept	-5.722	-0.595	0.552	-24.604	13.161	
[INET=0] * I197_02	7.424	1.337	0.182	-3.484	18.332	INET*Purchase Motivation: Attractive sedan is launched
[INET=0] * I198_1	-4.812	-1.545	0.123	-10.932	1.308	INET*Determinants in model choice: Have decided the model well in advance
[INET=0] * I198_4	6.209	1.280	0.201	-3.321	15.739	INET*Determinants in model choice: Style
[INET=0] * I205	0.918	0.684	0.494	-1.720	3.557	INET*Information-gathering intensity about cars (5 point scale; 1: very passively -- 5: very actively)
[INET=0] * I207_05	-0.470	-0.143	0.886	-6.939	5.999	INET*Kind of information used in determining candidates: Exhibitions and test drives
[INET=0] * I209_02	-1.000	-0.297	0.767	-7.611	5.611	INET*Kind of information used in determining a particular model: Newspapers and journals
[INET=0] * I209_04	3.143	0.985	0.325	-3.124	9.409	INET*Kind of information used in determining a particular model: D.M.s and brochures
[INET=0] * I212_06	-0.031	-0.005	0.996	-11.498	11.436	INET*How to get good terms and conditions: Have the manager participate in negotiation
[INET=0] * I220_08	0.523	0.125	0.900	-7.675	8.722	INET*Attitudes to Price Negotiation: Rather, dealers should look for the best car together.
[INET=0] * I222	1.708	0.791	0.429	-2.535	5.950	INET*Satisfaction level about terms and conditions (4 point scale; 1: very unsatisfied -- 4: very satisfied)
[INET=0] * I223	-3.005	-1.360	0.174	-7.347	1.337	INET*Interest level about the car in general (4 point scale; 1: totally uninterested -- 4: very interested)
[INET=0] * R010	0.587	0.559	0.576	-1.474	2.647	INET*Number of negotiations at the dealer store
[INET=0] * R011	0.536	0.477	0.633	-1.671	2.743	INET*Number of negotiations outside the dealer store
[INET=0] * R012	0.000	0.009	0.993	-0.103	0.104	INET*Length of one negotiation
[INET=0] * I410_2	10.327	1.605	0.109	-2.314	22.969	INET*Manufacturer: Suzuki
[INET=0] * I410_3	-7.764	-1.317	0.189	-19.351	3.823	INET*Manufacturer: Daihatsu
[INET=0] * I410_9	-7.994	-1.531	0.126	-18.253	2.264	INET*Manufacturer: Honda
[INET=0] * YB_SA_AV	0.006	1.517	0.130	-0.002	0.013	INET*New Car List Price minus Yellow Book Used-car Price of the model

Dependent variable = Amount of price discounts

+: P < 0.1, \*: P < 0.05, \*\*: P < 0.01

**Table 7: Difference between Internet and Non-Internet Users: (2) Own-Car Selling Prices**

Variable	Coefficient (beta)	t-value	Significance Level	95% Confidence Interval		Description	
				Lower	Upper		
Baseline = Internet Users [ INET = 1 ]							
Intercept	12.064	1.728	0.085	-1.654	25.781		+
Q2_7	-11.452	-1.970	0.049	-22.879	-0.026	Purchase Motivation: Car damaged by an accident	*
Q2_9	17.166	2.480	0.013	3.563	30.768	Purchase Motivation: Attractive trade-in price for old cars	*
Q4_2	-5.201	-2.448	0.015	-9.376	-1.026	Information-gathering intensity about terms and conditions (5 point scale; 1: very passively -- 5: very actively)	*
Q4_3	3.573	1.569	0.117	-0.903	8.050	Information-gathering intensity about price assessment of the own car (5 point scale; 1: very passively -- 5: very actively)	
Q4_4_11	-10.915	-1.887	0.060	-22.280	0.450	Kind of information used in buying new car: Homepage of manufacturers	+
Q4_6_1	-10.015	-0.981	0.327	-30.074	10.044	Kind of information used in selling one's own car: TVs and radios	
Q4_6_2	15.298	2.579	0.010	3.642	26.954	Kind of information used in selling one's own car: Newspapers and journals	*
Q5_2	-0.298	-3.323	0.001	-0.475	-0.122	Days from starting negotiation to closing negotiation	**
Q8_4	27.306	2.869	0.004	8.604	46.008	Way to sell one's own car: sell it to other dealers	**
Q9_2	10.622	2.044	0.042	0.407	20.837	Reason to adopt the particular way of selling one's car: Employees of the company are reliable	*
Q9_4	-1.967	-0.307	0.759	-14.568	10.634	Reason to adopt the particular way of selling one's car: Good price is expected	
Q9_6	-9.758	-1.276	0.202	-24.781	5.266	Reason to adopt the particular way of selling one's car: Do not know other ways	
Q10_1	12.962	2.191	0.029	1.336	24.588	How to get high price assessment of one's own car: Compare with other dealers' offers	*
Q13_2	3.765	1.804	0.072	-0.337	7.866	Number of negotiations for selling one's own car: for those who negotiate car selling terms and conditions	+
Q22_1	9.668	2.253	0.025	1.235	18.101	Why not try to access to used-car purchasing-only companies: Trade-in price becomes higher when it combined with new-car price discounts	*
Q22_4	-3.805	-0.520	0.603	-18.191	10.581	Why not try to access to used-car purchasing-only companies: Have an acquaintance in the dealer	
Q22_7	-18.368	-3.112	0.002	-29.968	-6.768	Why not try to access to used-car purchasing-only companies: Do not know the system of it	**
F2_2_2	1.051	0.136	0.892	-14.098	16.200	Age: 10s and 20s	
F13_2_2	4.355	0.891	0.373	-5.253	13.964	Size Category of purchased car: Medium	
F13_2_5	16.694	2.866	0.004	5.245	28.143	Size Category of purchased car: RV	**
I401_3	16.365	2.940	0.003	5.425	27.304	Area: Chubu and Hokuriku	**
YEL_AVE	0.052	9.276	0.000	0.041	0.063	Yellow Book average price	**
Difference of Non-Internet Users [ INET = 0 ] from Internet Users [ INET = 1 ]							
[INET=0]	-11.533	-1.375	0.170	-28.019	4.954		*
* Q2_7	9.455	1.182	0.238	-6.265	25.175	INET*Purchase Motivation: Car damaged by an accident	
* Q2_9	-8.869	-1.003	0.317	-26.249	8.512	INET*Purchase Motivation: Attractive trade-in price for old cars	
* Q4_2	1.181	0.424	0.672	-4.299	6.662	INET*Information-gathering intensity about terms and conditions (5 point scale; 1: very passively -- 5: very actively)	
* Q4_3	0.449	0.152	0.879	-5.342	6.240	INET*Information-gathering intensity about price assessment of the own car (5 point scale; 1: very passively -- 5: very actively)	
* Q4_6_1	-9.715	-0.723	0.470	-36.127	16.698	INET*Kind of information used in selling one's own car: TVs and radios	
* Q4_6_2	-6.466	-0.829	0.408	-21.797	8.864	INET*Kind of information used in selling one's own car: Newspapers and journals	
* Q5_2	0.358	2.273	0.024	0.048	0.668	INET*Days from starting negotiation to closing negotiation	*
* Q8_4	-26.062	-2.132	0.034	-50.081	-2.044	INET*Way to sell one's own car: sell it to other dealers	*
* Q9_2	-5.637	-0.880	0.379	-18.224	6.949	INET*Reason to adopt the particular way of selling one's car: Employees of the company are reliable	
* Q9_4	17.467	2.103	0.036	1.145	33.790	INET*Reason to adopt the particular way of selling one's car: Good price is expected	*
* Q9_6	-1.009	-0.102	0.919	-20.481	18.463	INET*Reason to adopt the particular way of selling one's car: Do not know other ways	
* Q10_1	-6.251	-0.826	0.409	-21.125	8.622	INET*How to get high price assessment of one's own car: Compare with other dealers' offers	
* Q13_2	-1.450	-0.575	0.566	-6.409	3.508	INET*Number of negotiations for selling one's own car: for those who negotiate car selling terms and conditions	
* Q22_1	-5.146	-0.936	0.350	-15.950	5.658	INET*Why not try to access to used-car purchasing-only companies: Trade-in price becomes higher when it combined with new-car price discounts	
* Q22_4	-6.498	-0.748	0.455	-23.558	10.562	INET*Why not try to access to used-car purchasing-only companies: Have an acquaintance in the dealer	
* Q22_7	15.774	1.940	0.053	-0.209	31.756	INET*Why not try to access to used-car purchasing-only companies: Do not know the system of it	+
* F2_2_2	8.498	0.883	0.378	-10.417	27.412	INET*Age: 10s and 20s	
* F13_2_2	2.336	0.377	0.707	-9.856	14.529	INET*Size Category of purchased car: Medium	
* F13_2_5	-5.788	-0.771	0.441	-20.538	8.961	INET*Size Category of purchased car: RV	
* I401_3	-8.219	-1.146	0.252	-22.310	5.871	INET*Area: Chubu and Hokuriku	
* YEL_AVE	0.001	0.133	0.894	-0.013	0.015	INET*Yellow Book average price	

## Consumer Attitudes and Automotive Transactions

Table A.1. List of Variables Considered in the Regression Model of New-Car Price Discounts

variable	Description
I197_01	Purchase Motivation: Replace an old car
I197_02	Purchase Motivation: Attractive sedan is launched
I197_03	Purchase Motivation: Attractive RV is launched
I197_04	Purchase Motivation: Attractive mini car is launched
I197_05	Purchase Motivation: Attractively priced
I197_06	Purchase Motivation: Vehicle inspection approaching
I197_07	Purchase Motivation: Car damaged by an accident
I197_08	Purchase Motivation: Salesperson's recommendation
I197_09	Purchase Motivation: Attractive trade-in price for old cars
I197_10	Purchase Motivation: Bought for the first time
I198_1	Determinants in model choice: Have decided the model well in advance
I198_2	Determinants in model choice: Test drive
I198_3	Determinants in model choice: Price
I198_4	Determinants in model choice: Style
I198_5	Determinants in model choice: Easiness to drive
I198_6	Determinants in model choice: Reliability of (the branch of) the dealer
I198_7	Determinants in model choice: Reliability of the salesperson
I204	Involvement in negotiation (4 point scale: 1: completely uninvolved -- 4: very involved)
I205	Information-gathering intensity about cars (5 point scale: 1: very passively -- 5: very actively)
I206	Information-gathering intensity about terms and conditions (5 point scale: 1: very passively -- 5: very actively)
I207_01	Kind of information used in determining candidates: TVs and radios
I207_02	Kind of information used in determining candidates: Newspapers and journals
I207_03	Kind of information used in determining candidates: Salespersons
I207_04	Kind of information used in determining candidates: D.M.s and brochures
I207_05	Kind of information used in determining candidates: Exhibitions and test drives
I207_06	Kind of information used in determining candidates: Motor shows
I207_07	Kind of information used in determining candidates: Friends and relatives
I207_08	Kind of information used in determining candidates: Seen on the streets
I207_10	Kind of information used in determining candidates: Homepage of manufacturers
I209_01	Kind of information used in determining a particular model: TVs and radios
I209_02	Kind of information used in determining a particular model: Newspapers and journals
I209_03	Kind of information used in determining a particular model: Salespersons
I209_04	Kind of information used in determining a particular model: D.M.s and brochures
I209_05	Kind of information used in determining a particular model: Exhibitions and test drives
I209_07	Kind of information used in determining a particular model: Friends and relatives
I209_08	Kind of information used in determining a particular model: Seen on the streets
I212_01	How to get good terms and conditions: Ask to attach options for free
I212_02	How to get good terms and conditions: Show competing dealers' price
I212_03	How to get good terms and conditions: Get trade-in price information in other dealers
I212_04	How to get good terms and conditions: Prolong negotiation
I212_05	How to get good terms and conditions: Rely on friends' recommendation
I212_06	How to get good terms and conditions: Have the manager participate in negotiation
I212_08	How to get good terms and conditions: Buy the model just before model-change
I212_09	How to get good terms and conditions: Compromise with the model suggested by the dealer
I212_10	How to get good terms and conditions: Do nothing
I213	Is the car you purchased the one you first want to buy? (4 point scale: 1: stick the decided model -- 4: the another model)
I220_01	Attitudes to Price Negotiation: Prices should be open. (No MSRP).
I220_02	Attitudes to Price Negotiation: Dealers should post their prices clearly.
I220_03	Attitudes to Price Negotiation: Prices should be one price.
I220_04	Attitudes to Price Negotiation: Rather, loan rates should be lowered.
I220_05	Attitudes to Price Negotiation: Amusing, like a game.
I220_06	Attitudes to Price Negotiation: Good opportunity to know staffs of the dealer.
I220_07	Attitudes to Price Negotiation: Rather, after-sales services levels should be clarified.
I220_08	Attitudes to Price Negotiation: Rather, dealers should look for the best car together.
I220_09	Attitudes to Price Negotiation: Total waste of time.
I220_10	Attitudes to Price Negotiation: Rather, dealers should display more models.
I223	Interest level about the car in general (4 point scale: 1: totally uninterested -- 4: very interested)
I228	Sex (1: male, 2: female)
I242	New-car buyer or used-car buyer (1: new-car, 2: used-car)
INET	Internet usage
PC	Whether to use PC
I196_1	Location of purchase: New dealer
I196_2	Location of purchase: Same dealer as in the last purchase
I196_3	Location of purchase: Always from the same dealer
I196_4	Location of purchase: Used-car dealers
I196_5	Location of purchase: Garage
I196_6	Location of purchase: Friends and relatives
I225_1	Major efforts: Selection of the model
I225_2	Major efforts: Price negotiation
I225_3	Major efforts: Trade-in price negotiation
I225_4	Major efforts: Financing
R008	Days from starting to consider purchase to closing negotiation
R009	Days from starting negotiation to closing negotiation
R010	Number of negotiations at the dealer store
R011	Number of negotiations outside the dealer store
R012	Length of one negotiation
Way to sell one's own car:	Size Category of purchased car: Large
I239_2	Size Category of purchased car: Medium
I239_3	Size Category of purchased car: Small
I239_5	Size Category of purchased car: RV
I410_2	Manufacturer: Suzuki
I410_3	Manufacturer: Daihatsu
I410_4	Manufacturer: Mazda
I410_6	Manufacturer: Toyota
I410_7	Manufacturer: Nissan
I410_8	Manufacturer: Fuji Juko (Subaru)
I410_9	Manufacturer: Honda
I410_10	Manufacturer: Mitsubishi
I224_2	Purchase Initiative: Recommendation of friends and relatives
I224_3	Purchase Initiative: Own decision
YB_AV	Next year's Yellow Book used-car average price of the model
YB_SA_AV	New Car List Price minus Yellow Book Used-car Price of the model

Note: See the text.

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Table A.2. List of Variables Considered in the Regression Model of Owned-Car Selling Prices

variable	Description
Q1_2	Location of purchase: New dealer
Q1_3	Location of purchase: Same dealer as in the last purchase
Q1_4	Location of purchase: Used-car dealers
Q1_5	Location of purchase: Garage
Q1_67	Location of purchase: Friends and relatives
Q2_1	Purchase Motivation: Replace an old car
Q2_2	Purchase Motivation: Attractive sedan is launched
Q2_3	Purchase Motivation: Attractive RV is launched
Q2_4	Purchase Motivation: Attractive mini car is launched
Q2_5	Purchase Motivation: Attractively priced
Q2_6	Purchase Motivation: Vehicle inspection approaching
Q2_7	Purchase Motivation: Car damaged by an accident
Q2_8	Purchase Motivation: Salesperson's recommendation
Q2_9	Purchase Motivation: Attractive trade-in price for old cars
Q3	Involvement in negotiation (4 point scale; 1: completely uninvolved -- 4: very involved)
Q4_1	Information-gathering intensity about cars (5 point scale; 1: very passively -- 5: very actively)
Q4_2	Information-gathering intensity about terms and conditions (5 point scale; 1: very passively -- 5: very actively)
Q4_3	Information-gathering intensity about price assessment of the own car (5 point scale; 1: very passively -- 5: very actively)
Q4_4_1	Kind of information used in buying new car: TVs and radios
Q4_4_2	Kind of information used in buying new car: Newspapers and journals
Q4_4_3	Kind of information used in buying new car: Salespersons
Q4_4_4	Kind of information used in buying new car: D.M.s and brochures
Q4_4_5	Kind of information used in buying new car: Exhibitions and test drives
Q4_4_6	Kind of information used in buying new car: Motor shows
Q4_4_8	Kind of information used in buying new car: Friends and relatives
Q4_4_9	Kind of information used in buying new car: Seen on the streets
Q4_4_11	Kind of information used in buying new car: Homepage of manufacturers
Q4_6_1	Kind of information used in selling one's own car: TVs and radios
Q4_6_2	Kind of information used in selling one's own car: Newspapers and journals
Q4_6_3	Kind of information used in selling one's own car: Employees of new-car dealers
Q4_6_4	Kind of information used in selling one's own car: Employees of used-car purchasing-only companies
Q4_6_5	Kind of information used in selling one's own car: Friends and relatives
Q5_1	Days from starting to consider purchase to closing negotiation
Q5_2	Days from starting negotiation to closing negotiation
Q6	Whether one bought the previous car with loan finance (1: no previous car, 2: no loan, 3: already paid off, 4: loan remained)
Q7	Way to purchase the currently held car (4 point scale; 1: all cash -- 4: all loan)
Q8_3	Way to sell one's own car: sell it to a used-car purchasing-only company
Q8_4	Way to sell one's own car: sell it to other dealers
Q8_5	Way to sell one's own car: sell it to friends or relatives
Q8_7	Way to sell one's own car: others
Q9_1	Reason to adopt the particular way of selling one's car: Convenience
Q9_2	Reason to adopt the particular way of selling one's car: Employees of the company are reliable
Q9_3	Reason to adopt the particular way of selling one's car: The company is reliable
Q9_4	Reason to adopt the particular way of selling one's car: Good price is expected
Q9_5	Reason to adopt the particular way of selling one's car: Combined with new-car price discounts
Q9_6	Reason to adopt the particular way of selling one's car: Do not know other ways
Q10_1	How to get high price assessment of one's own car: Compare with other dealers' offers
Q10_2	How to get high price assessment of one's own car: Compare with other used-car purchasing-only companies' offers
Q10_4	How to get high price assessment of one's own car: Prolong negotiation
Q10_5	How to get high price assessment of one's own car: Rely on friends' recommendation
Q10_6	How to get high price assessment of one's own car: Have the manager participate in negotiation
Q10_8	How to get high price assessment of one's own car: Do nothing
Q13_1	Number of negotiations for selling one's own car: for those who has the negotiation only along with new-car purchasing negotiation
Q13_2	Number of negotiations for selling one's own car: for those who negotiate car selling terms and conditions
Q13_3	Number of negotiations for selling one's own car: for those who use price assessment of other companies that new-car dealers
Q13_4	Number of negotiations for selling one's own car: for those who use price assessment of used-car purchasing-only companies
Q17	Purchase Initiative: (5 point scale; 1: salesperson -- 3: friends and relatives -- 5: self)
Q18	Interest level about the car in general (4 point scale; 1: totally uninterested -- 4: very interested)
Q19_1	Major efforts: Selection of the model
Q19_2	Major efforts: Price negotiation
Q19_3	Major efforts: Trade-in price negotiation
Q19_4	Major efforts: Financing
Q22_1	Why not try to access to used-car purchasing-only companies: Trade-in price becomes higher when it combined with new-car price discounts
Q22_2	Why not try to access to used-car purchasing-only companies: Its offer is not higher than trade-in price
Q22_3	Why not try to access to used-car purchasing-only companies: The dealer is more reliable
Q22_4	Why not try to access to used-car purchasing-only companies: Have an acquaintance in the dealer
Q22_5	Why not try to access to used-car purchasing-only companies: Inconvenience until delivery of new-car
Q22_6	Why not try to access to used-car purchasing-only companies: Trade-in price is higher
Q22_7	Why not try to access to used-car purchasing-only companies: Do not know the system of it
Q22_8	Why not try to access to used-car purchasing-only companies: Not in near
Q22_9	Why not try to access to used-car purchasing-only companies: Troublesome to access
Q22_12	Why not try to access to used-car purchasing-only companies: Do not know it
F1	Sex (1: male, 2: female)
F2_2_2	Age: 10s and 20s
F2_2_4	Age: 40s
F2_2_5	Age: 50s
F2_2_6	Age: 60s
F2_2_7	Age: 70s
F3_2	Profession: Self-employed
F3_4	Profession: Manager
F3_5	Profession: Professional
F3_6	Profession: Clerical
F3_7	Profession: Manual labor
F3_9	Profession: Agriculture, etc.
F4	Income of the purchaser (0: 0, 2: less than 2 million yen, 3: less than 3 million yen, 4: less than 4 million yen, 5: less than 5 million yen, 7: less than 7 million yen, 9: less than 9 million yen, 10: more than 9 million yen)
F5	Income of the household (3: less than 3 million yen, 4: less than 4 million yen, 5: less than 5 million yen, 7: less than 7 million yen, 9: less than 9 million yen, 11: less than 11 million yen, 13: more than 11 million yen)
F6	Education (1: elementary and junior high school, 2: senior high school, 3: special school, 4: junior college, 5: college and university)
F7_1	Relation to household head: household head
F7_2	Relation to household head: spouse
F7_3	Relation to household head: son
F7_4	Relation to household head: daughter
F13_2_1	Size Category of purchased car: Large
F13_2_2	Size Category of purchased car: Medium
F13_2_4	Size Category of purchased car: Mini
F13_2_5	Size Category of purchased car: RV
F16	Whether one's previously owned car is a used car or not. (1: new-car, 2: used-car)
I401_1	Area: Hokkaido and Tohoku
I401_3	Area: Chubu and Hokuriku
I401_4	Area: Kinki
I401_6	Area: Chugoku and Shikoku
I401_7	Area: Kyushu
I402	Population of a city (1: millions, 2: more than 150 thousands, 3: more than 50 thousands, 4: less than 50 thousands, 5: small towns and villages)
PC	Whether to use PC
INET	Internet usage
YEL_AVE	Yellow Book average price
SYAREI	Vehicle age

Note: See the text.

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Kiyohiko G. Nishimura is Professor of Economics at the University of Tokyo. He received B.A. (1975) and M.A. (1977) from the University of Tokyo, and Ph. D. (1982) from Yale University. He was Arthur M. Okun Research Fellow (1981-1982) at the Brookings Institution in Washington, D.C., before joining the Faculty of Economics of the University of Tokyo in 1993. He was Associate Professor (1983-1994) and Professor (1994-) there. From 2003, He is also Executive Research Fellow, Economic and Social Research Institute, Cabinet Office, Government of Japan. His research area spans widely from economic theory such as mathematical economics and microeconomic foundation of macroeconomics, to management studies such as real estate and automobile distribution. He received the Nikkei Prize in 1993 for his book, *Imperfect Competition, Differential Information, and Microeconomic Foundations of Macroeconomics* (Oxford University Press, 1992) and the Japan Economist Prize in 1997 for his book, *Macroeconomics of "Price Revolution"* (Mainichi Shinbun, 1996). He was also the winner of Japan-Economic-Association-Nakahara Prize in 1998 for his international contribution to mathematical economics and economic theory. He is now a senior advisor of the Asian Economic Panel and a member of the editorial board of several international academic journals in economics. He also holds business positions: he sits in the Advisory Board of the Fujitsu Research Institute (Japan) and an academic advisor of Recruit & Co. (Japan) and Investment Property Databank (U. K.).

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