

Inviting entrants may help incumbent firms*

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March 30, 2007

In preparation for submitting to Marketing Science

Abstract

This paper provides an example that incumbent firms might allow potential entrants to enter a market. The market consists of two sub-markets: a high-end market and a low-end market. (i) If non-brand products are of no value to consumers in the high-end market, (ii) consumers in the low-end market will not be concerned about brand names; and (iii) if the low-end market is relatively small, then the entries of firms into the low-end market would be beneficial to the incumbent firms. To be more specific, entry into a certain market represents a commitment to prevent incumbent firms from fierce competition within the high-end market and guarantees higher profits to the incumbent firms.

JEL classification numbers: M21, L13

Key words: entry, handover, heterogeneous consumers, commitment, oligopoly

*The authors are grateful to Hisamoto Hisao, Motonari Kurasawa, Masayoshi Maruyama, Keizo Mizuno, Tatsuhiko Nariu, Takao Ohkawa, Yoshiyasu Ono, Tadashi Sekiguchi, Daisuke Shimizu, Hideo Suehiro, Kentaro Tachi, Naoki Watanabe, Lex Zhao, and seminar participants at Kyoto University, Kobe Summer Seminar for Half-Light Idea 2006, and Shinshu University for their helpful comments. Of course, any errors are the responsibility of the authors.

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1 Introduction

Standard microeconomics textbooks explain that, in an oligopoly market (e.g., Cournot oligopoly), the profits of the firms decrease as the number of firms increases. In many real-world markets, the characteristics concerning reductions in profits actually hold.¹ In markets which have those characteristics, it is natural for incumbent firms to be apprehensive about the possibility of other firms entering the market. Protests by incumbent firms against the entry deregulation are typical examples of such apprehension. In fact, after a government allows potential entrants to enter a market, the profits of incumbent firms dramatically decrease because of tough competition among the entrants and the incumbents (e.g., the deregulation of the Japanese taxi industry). Therefore, many economists do not speculate very much whether potential rivals are beneficial for incumbent firms; however, they have often studied marketing and management strategies concerning how to prevent and deter potential entrants into the market and the welfare implication of entry deterrence by incumbent firms.² For instance, in the literature of spatial competition, Schmalensee (1978) shows that new brand introductions by incumbent firms can deter entry and protect their profits. (see also, Bonanno (1987), Ishibashi (2003), Judd (1985)).

We show that the above-mentioned conventional wisdom does not hold under a plausible market characteristic, that is, under a condition, the entries of entrants increase the profits of incumbent firms. We now mention the market characteristic discussed here. Established products and non-established products exist in the same markets, and they are recognized as differentiated products. We can commonly observe those product characteristics. For instance, in the food industry, name-brand products are produced by established firms, and

¹ In several papers, it has been reported that the total profits of an industry may result in an increase in the number of firms. Using a bilateral oligopoly model, Naylor (2002a) shows that for a small number of firms, the increment in the number of firms enhances the overall profits of an industry. However, per firm profit decreases as the number of firms increases.

² See, for instance, Bernheim (1984), Dixit (1980), Eaton and Ware (1987), Gelman and Salop (1983), McLean and Riordan (1989), Sørsgard (1997), and Waldman (1987, 1991). Geroski (1995) provides an excellent survey on the literature of entry problems.

private-label food products are produced by non-established and established firms. Some consumers distinguish those name-brand food products from private-label products, even though they frequently offer equivalent quality.

In the literature of marketing, some researchers have examined that the heterogeneity of consumers' preferences for national brands and private label (or generic brands) exists, that is, the basic setting of our model is plausible. For instance, Cunningham *et al.* (1982) observe that consumers rate national brands as superior to private label and generic brands in terms of taste, appearance, labelling, and variety of choice (see also Bellizzi *et al.* (1981)). Following cue utilization theory, Richardson *et al.* (1994) examine the relative importance of extrinsic versus intrinsic cues in determined perception of store brand quality. Distinguishing the real quality (intrinsic cues) and image (extrinsic cues) effects on consumers' perceptions of quality, they show that consumers' unfavorable reactions to store brand grocery items are largely the result of consumers' propensity to rely on extrinsic cues (image effects) when assessing product quality (see also Richardson *et al.* (1996) and Dick (1995)). Moreover, as summarized in Soberman and Parker (2004), some empirical studies show that some consumers are willing to pay more for advertised (name-brand) products. In other words, some consumers believe that private-label products are the same as store-brands in regards to overall quality, taste, availability, freshness, guarantee of satisfaction, clarity of labelling, and quality of packaging, among other attributes.

Some researches empirically consider those market structure (national brands versus private labels (generic brands)) and provide several interesting features concerning the effects of market entries. That is, the results of those researches may be consistent with that of ours. In the food industry, the invasion of private-label food products sometimes causes increases in prices and profits of name-brand products. Pauwels and Srinivasan (2004) empirically show that the invasion of private-label food products produces increases in the *profits* of name-brand (premium brand) goods. They provide a plausible explanation that premium brands do not directly compete with the private labels, but instead focus on serving their core brand-conscious consumer segments with the introduction of new product varieties. The

logic presented in Pauwels and Srinivasan (2004) is somewhat similar to that in our model. Ward *et al.* (2002) empirically show that increases in the share of private-label goods are correlated with a rise in the price of name-brand goods. In the pharmaceutical industry, the entry of generic versions of brand-name drugs results in increases in brand-name prices. For example, Frank and Salkever (1997) provide evidence that brand-name prices increase after the entry of generic drugs into the market and are accompanied by large decreases in the prices of the generic drugs in general.

We now explain the market structure discussed in the paper. The market consists of two sub-markets: a high-end market and a low-end one. Consumers in the high-end market require name-brand products. Private-label products are of no value to those consumers. On the other hand, consumers in the low-end market are less concerned with brand-names. The low-end market is relatively small compared to the high-end market. In this study, there are two incumbent firms and a potential entrant. Some entry barriers may prevent a potential entrant from joining the market without the cooperation of an incumbent firm.³

In this setting, we show a subgame perfect equilibrium that enables an incumbent firm to support a new entrant as a *local* monopolist in the low-end market. Without the entry of a new firm, the incumbents will need to produce more because the low-end market remains empty and sufficiently profitable. However, once incumbent firms sell their products to consumers in the low-end market, the price in the high-end market collapses, and then the profits of the incumbent firms drastically decrease. The entry is a credible commitment not to sell their name-branded products to consumers in the low-end market. As a result, the

³ The setting discussed here is related to that in Rosenthal (1980). He also discusses a market structure in which two classes of consumers exist: those who view labels of companies as artifacts and purchase only from the low-price company; and those who perceive significant differences among the brands and purchase only from their respective favorite brands (see, Rosenthal (1980, p. 1575)). He shows that the equilibrium price increases as the number of firms increases. In his model, however, pure-strategy equilibria do not exist and the increment of the equilibrium price is evaluated on the concept of stochastic dominance. Rosenthal (1980) and most of the subsequent researches (e.g. Narasimhan (1988) and Baye *et al.* (2004)) discuss the topic of price dispersion but do not consider the relation between the profitability of incumbent firms and the existence of entrants.

incumbent firms can secure high profits from the high-end market.

We now report the theoretical contribution of our results. As stated above, we show that entries might raise both the incumbent's profits and the equilibrium price.⁴ To our knowledge, no previous study has shown that the profits of incumbent firms *increase* as a result of the entries of new firms into the market and then the prices of the incumbent firms' products increase. However, several studies have indicated that market entries produce increases in the price of the incumbent firm's product. Inderst (2002) considers how prices react to an increase in competition. In his model, an incumbent enjoys the advantage of having a locked-in fraction of buyers. He shows that the price of a product produced by the incumbent firm may increase. He does not show that the profit of the incumbent firm increases as a result of the entry of new firms into the market. Davis *et al.* (2004) consider a duopoly model in which an incumbent firm and an entrant exist. When the entrant enters the market, the incumbent firm sets its price higher than that in the monopoly situation because serving consumers with lower willingness to pay is not beneficial. They also consider the product positioning of the firms, but they do not show the profit of the incumbent relative to that of the new entrant.

The organization of the remainder of the paper is as follows. In the next section, we describe a two-stage game model. In Section 3, we derive the subgame perfect equilibrium of the game constructed in the previous section. The last section is the conclusion.

2 Model

We consider an industry with two vertically differentiated products (h and l). h and l are high- and low-quality products, respectively. There are two major firms (1 and 2) and one minor firm (3). The major firms can produce h at a constant marginal cost normalized to zero. We assume that neither major firm produces l . A minor firm cannot produce any good

⁴ Naylor (2002b) derives a similar result in the context of wage bargaining in unionized bilateral oligopoly. He considers a simple Cournot oligopoly model in which wages are determined by bargaining in unionized bilateral oligopoly. In his model, the equilibrium price of the final product, however, always decreases as the number of firms increases. This is quite different from the price change by the entries in our model.

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The existence of low-end firms may help high-end firms*

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April 9, 2007

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Abstract

This paper provides an example that competition between high-end and low-end products benefits the high-end firms. The key factor is the existence of two heterogeneous consumer groups: (a) consumers who demand only high-end products and (b) consumers who care little whether products are high-end or low-end. We show that if the former group is relatively large to the latter group, the profits of firms in the high-end market increases when there are firms in the low-end market compare to when no firm is in the low-end market.

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1 Introduction

This paper provides an example that competition between high-end and low-end products benefits the high-end firms. The key factor in our example is the existence of two heterogeneous consumer groups. One of the groups consists of consumers who demand high-end (name-brand) products. Low-end (private-label) products are **worth little to them**. The other group consists of consumers who care little whether products are high-end or low-end. Therefore, they buy products with the lowest price.¹ Based on the heterogeneous consumer groups, we show that if the former group is relatively large to the latter group, the profits of firms in the high-end market are larger when there are firms in the low-end market than those when no firm is in the low-end market.²

The logic behind our result is as follows. If no firm is in the low-end market or the price of the low-end products is sufficiently high, the high-end firms have incentives to sell their products to the low-end consumers. Of course, once **high-end** firms sell their products to them, the price in the high-end market collapses. If the low-end market is relatively small compared to the high-end market, the increase in sales volume is offset by the decrease in price. As a result, the existence of the low-end market decreases the profits of the high-end firms. The existence of low-end firms makes the low-end market unprofitable for the high-end firms and breaks the high-end firms' incentives to produce more. Therefore, rivals in the low-end market becomes beneficial to the high-end firms. Note that the existence of low-end firms raises the price of the high-end products and decreases the supply of the

¹ Computer markets might be a good example of such heterogeneous groups of users. The computers designed for home users usually perform better than those designed for business users. This is because each home user uses PCs for various purposes: writing documents, listening to music, editing pictures, watching movies, and so on. Computers which perform poorly in image processing are of no use to home users. However, such computers are enough for business users who use computers only for writing documents and browsing the Internet.

² Rosenthal (1980) also adopts a similar setting to analyze the relationship between price dispersion and the number of suppliers. He considers two classes of consumers: consumers who view labels of companies as artifacts and purchase only from the low-price company; and consumers who perceive significant differences among the brands and purchase only from their respective favorite brands (see, Rosenthal (1980, p. 1575)).

high-end products.

Our results have three implications on the business strategies. The first is that the optimal price for the high-end products is not necessarily monotonically decreasing in the degree of competition of the corresponding low-end market. If the market structure is as stated above, the high-end firms should set high prices in spite of severe competition in the low-end market. The second is that various services to keep their consumers (very) loyal to own brands might become more important. If a firm obtains sufficiently enough loyal consumers, the firm can behave as a high-end firm. Our results imply that the firm can secure its profit no matter how the low-end market becomes competitive. The third is that the value of innovation might be much higher than it has been presumed if the innovation makes the firm a high-end firm. In markets where the speed of innovation is fast, current high-end firms would easily fall into low-end firms soon if they fail to innovate. If the market structure is as stated above, the value of new innovation for the current high-end firms is more than the “difference” between the current technology and the new one. Once a high-end firm falls into a low-end one, the price of its product would fall drastically because, at the same time, the product loses the price stability as a high-end product.

There is a literature in marketing which seems to be consistent with our arguments. First, as summarized in Soberman and Parker (2004), some empirical studies show the existence of the heterogeneity of consumers’ preferences for national brands and private label (or generic brands): some consumers are willing to pay more for advertised (name-brand) products while other consumers believe that private-label products are the same as name-brands in regards to overall quality, taste, availability, freshness, guarantee of satisfaction, clarity of labeling, and quality of packaging, among other attributes.

Second, Pauwels and Srinivasan (2004) empirically show that the invasion of private-label food products produces increases the *profits* of name-brand (premium brand) goods if consumers regard the quality of the name-brand as much higher than that of private-label. Although the fundamental structure of the food product industry is not exactly the same as our setting, our logic might apply with a slight modification.³

³ Pauwels and Srinivasan (2004) provide a plausible explanation for their findings that premium brands do

Third, some empirical researches report that the high-end price increases as the degree of competition in the low-end market increases.⁴ Ward *et al.* (2002) empirically show that increases in the share of private-label goods are correlated with a rise in the price of name-brand goods. Frank and Salkever (1997) provide evidence in the pharmaceutical industry that brand-name drug prices increase after the entry of generic drugs into the market and are accompanied by large decreases in the prices of the generic drugs in general.

Now, we state on the related theoretical literature. To the best of our knowledge, no previous study has shown that the *profits* of the high-end firms *increase* by competition with the low-end firms. In the context of market entry, however, there are some literature which argues that a new entry increases the *price* of the incumbent firm's product.⁵ Inderst (2002) considers how prices react to an increase in competition. Davis *et al.* (2004) show that a low-end firm's entry makes the incumbent high-end firm's price higher than the monopoly price.

The organization of the remainder of the paper is as follows. In the next section, we describe a simple Cournot duopoly game. In Section 3, we analyze the model by considering two cases: when there is no firm in the low-end market and when there are so many firms in the low-end market. Then, we derive the Cournot-Nash equilibria in each case and we investigate the comparative statics. The last section is the conclusion.

2 Model

We consider an industry with two differentiated products (h and l). For convenience, we call h (l) high-quality (low-quality) products, respectively. There are two major firms (1 and 2)

not directly compete with the private labels, but instead focus on serving their core brand-conscious consumer segments with the introduction of new product varieties. Our logic might be a theoretical explanation for their interpretation.

⁴ Remember that, in our argument, the existence of low-end firms raises the price of the high-end products and decreases the supply of the high-end products.

⁵In this context, we consider a situation that competition with the high-end and low-end firms occurs by the low-end firms' entry.

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1 Introduction

This paper provides an example that competition between high-end and low-end products benefits the high-end firms. The key factor in our example is the existence of two heterogeneous consumer groups. One of the groups consists of consumers who demand high-end (name-brand) products. Low-end (private-label) products are worth little to them. The other group consists of consumers who care little whether products are high-end or low-end. Therefore, they buy products with the lowest price.¹ Based on the heterogeneous consumer groups, we show that if the former group is relatively large to the latter group, the profits of firms in the high-end market are larger when there are firms in the low-end market than those when no firm is in the low-end market.²

The logic behind our result is as follows. If no firm is in the low-end market or the price of the low-end products is sufficiently high, the high-end firms have incentives to sell their products to the low-end consumers. Of course, once high-end firms sell their products to them, the price in the high-end market collapses. If the low-end market is relatively small compared to the high-end market, the increase in sales volume is offset by the decrease in price. As a result, the existence of the low-end market decreases the profits of the high-end firms. The sufficient supply of low-end products makes the low-end market unprofitable for the high-end firms and breaks the high-end firms' incentives to produce more. Therefore, rivals in the low-end market becomes beneficial to the high-end firms. Note that the existence of low-end firms raises the price of the high-end products and decreases the supply of the

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high-end products.

Our results have an implication on the pricing strategies. The optimal pricing for the high-end products need not be monotonically decreasing in the degree of competition in the corresponding low-end market. If the market structure is as stated above, the high-end firms should set high prices in spite of severe competition in the low-end market.

Given the main result of our paper, firms which produce high-end products should persuade customers that their products are status goods. Therefore, activities which enhance the status of the firms might be much more important in markets as stated above. We now mention several ways how to do such activities.

First, if brand values matter in a market, the owner firm should put more weights on advertising to make its brand perceived as “premium” by the high-end consumers. Once the brand is perceived as such, the firm can earn an additional profit caused by competition against firms in the corresponding low-end market.

Second, we think that the result in Randall *et al.* (1998) implies another route to do those promotional activities. Along the line of brand equity, Randall *et al.* (1998) show that the presence of “premium” or high-quality products in a product line enhance brand equity.³ Based on their research, if a “high-end” status (brand equity) in a market is associated with the other high-quality products in its product line, to protect the profit in the market, it will be beneficial for the firm to enhance the status in *the other* high-quality products. The promotional activity may indirectly enhance the profitability of the product in the market.⁴

Furthermore, if the technological progress plays an important role for being a high-end product, firms should spent more money on drastic innovations. The reason is the same:

³ Keller and Lehmann (2006) provide an excellent survey and the directions of future researches concerning the researches brands and brand equity.

⁴ When we employ those promotional activities, we have to take into account the caveat pointed out by Leclerc *et al.* (2005). They have shown that in separate evaluations, people are predisposed to use firm information (how the item ranks *within the firm*) as a frame of reference to evaluate the quality of that item. As a result, people may evaluate a high-status item of a low-status firm better than a low-status item of a high-status firm. To overcome the propensity to do so, we have to induce customers to focus their attention on differences *between the firms*.

once the product satisfies the technological requirements the high-end consumers demand, the firm can secure its profit that is stable no matter how the low-end market becomes competitive.

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Third, some empirical researches report that the high-end price increases as the degree of competition in the low-end market increases.⁶ Ward *et al.* (2002) empirically show that increases in the share of private-label goods are correlated with a rise in the price of name-brand goods. Frank and Salkever (1997) provide evidence in the pharmaceutical industry that brand-name drug prices increase after the entry of generic drugs into the market and are accompanied by large decreases in the prices of the generic drugs in general.

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⁵ Pauwels and Srinivasan (2004) provide a plausible explanation for their findings that premium brands do not directly compete with the private labels, but instead focus on serving their core brand-conscious consumer segments with the introduction of new product varieties. Our logic might be a theoretical explanation for their interpretation.

⁶ Remember that, in our argument, the existence of low-end firms raises the price of the high-end products and decreases the supply of the high-end products.

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The existence of low-end firms may help high-end firms*

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April 18, 2007

In preparation for submitting to Marketing Science

*The authors are grateful to Hisao Hisamoto, Junichiro Ishida, Hiroki Kondo, Motonari Kurasawa, Masayoshi Maruyama, Keizo Mizuno, Noriaki Murakami, Tatsuhiko Nariu, Takao Ohkawa, Tetsuo Ono, Yoshiyasu Ono, Tadashi Sekiguchi, Kyohei Shibata, Daisuke Shimizu, Ryusuke Shinohara, Hideo Suehiro, Kentaro Tachi, Naoki Watanabe, Masatoshi Yamada, Lex Zhao, and seminar participants at Kobe Summer Seminar for Half-Light Idea 2006, Kyoto University, Osaka University, and Shinshu University for their helpful comments. Of course, any errors are the responsibility of the authors.

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The existence of low-end firms may help high-end firms

Abstract

This paper provides an example that competition between high-end and low-end products benefits the high-end firms. The key factor is the existence of two heterogeneous consumer groups: (a) consumers who demands only high-end products and (b) consumers who care little whether products are high-end or low-end. We show that if the former group is relatively large to the latter one, the profits of firms in the high-end market when there exist firms producing low-end products are larger than those when those low-end firms does not exist. The result provides a new theoretical mechanism concerning the profitability and pricing of national brand firms after the entries of private labels. It also provides several implications on the pricing strategies and marketing strategies. For instance, established firms should not decrease their prices after the entries of non-established firms; established firms should persuade customers that their products are status goods more eagerly after the entries of non-established firms.

Key words: Marketing strategy, pricing research, product positioning, game theory

1 Introduction

This paper provides an example that competition between high-end and low-end products benefits the high-end firms. The key factor in our example is the existence of two heterogeneous consumer groups. One of the groups consists of consumers who demand high-end (name-brand) products. Low-end (private-label) products are worth little to them. The other group consists of consumers who care little whether products are high-end or low-end. Therefore, they buy products with the lowest price.¹ Based on the heterogeneous consumer groups, we show that if the former group is relatively large to the latter group, the profits of firms in the high-end market are larger when there are firms in the low-end market than those when no firm is in the low-end market.²

The logic behind our result is as follows. If no firm is in the low-end market or the price of the low-end products is sufficiently high, the high-end firms have incentives to sell their products to the low-end consumers. Of course, once high-end firms sell their products to them, the price in the high-end market collapses. If the low-end market is relatively small compared to the high-end market, the increase in sales volume is offset by the decrease in price. As a result, the existence of the low-end market decreases the profits of the high-end firms. The sufficient supply of low-end products makes the low-end market unprofitable for the high-end firms and breaks the high-end firms' incentives to produce more. Therefore, rivals in the low-end market becomes beneficial to the high-end firms. Note that the existence of low-end firms raises the price of the high-end products and decreases the supply of the

¹ Computer markets might be a good example of such heterogeneous groups of users. The computers designed for home users usually perform better than those designed for business users. This is because each home user uses PCs for various purposes: writing documents, listening to music, editing pictures, watching movies, and so on. Computers which perform poorly in image processing are of no use to home users. However, such computers are enough for business users who use computers only for writing documents and browsing the Internet.

² Rosenthal (1980) also adopts a similar setting to analyze the relationship between price dispersion and the number of suppliers. He considers two classes of consumers: consumers who view labels of companies as artifacts and purchase only from the low-price company; and consumers who perceive significant differences among the brands and purchase only from their respective favorite brands (see, Rosenthal (1980, p. 1575)).

high-end products.

Our results have an implication on the pricing strategies. The optimal pricing for the high-end products need not be monotonically decreasing in the degree of competition in the corresponding low-end market. If the market structure is as stated above, the high-end firms should set high prices in spite of severe competition in the low-end market.³

Given the main result of our paper, firms which produce high-end products should persuade customers that their products are status goods. Therefore, activities which enhance the status of the firms might be much more important in markets as stated above. We now mention several ways how to do such activities.

First, if brand values matter in a market, the owner firm should put more weights on advertising to make its brand perceived as “premium” by the high-end consumers. Once the brand is perceived as such, the firm can earn an additional profit caused by competition against firms in the corresponding low-end market.

Second, we think that the result in Randall *et al.* (1998) implies another route to do those promotional activities. Along the line of brand equity, Randall *et al.* (1998) show that the presence of “premium” or high-quality products in a product line enhance brand equity.⁴ Based on their research, if a “high-end” status (brand equity) in a market is associated with the other high-quality products in its product line, to protect the profit in the market, it will be beneficial for the firm to enhance the status in *the other* high-quality products. The promotional activity may indirectly enhance the profitability of the product in the market.⁵

³ Hauser and Shugan (1983) is a pioneering work about the relation between the competitiveness and marketing strategies. Recently, along the line, Sayman *et al.* (2002) and Steenkamp *et al.* (2005) empirically discuss those matters.

⁴ Keller and Lehmann (2006) provide an excellent survey and the directions of future researches concerning the researches of brands and brand equity.

⁵ When we employ those promotional activities, we have to take into account the caveat pointed out by Leclerc *et al.* (2005). They have shown that in separate evaluations, people are predisposed to use firm information (how the item ranks *within the firm*) as a frame of reference to evaluate the quality of that item. As a result, customers may evaluate a high-status item of a low-status firm better than a low-status item of a high-status firm. To overcome the propensity to do so, we have to induce customers to focus their attention on differences *between the firms*.

Furthermore, if the technological progress plays an important role for being a high-end product, firms should spend more money on drastic innovations. The reason is the same: once the product satisfies the technological requirements the high-end consumers demand, the firm can secure its profit that is stable no matter how the low-end market becomes competitive.

There is a literature in marketing which seems to be consistent with our arguments. First, as summarized in Soberman and Parker (2004), some empirical studies show the existence of the heterogeneity of consumers' preferences for national brands and private label (or generic brands): some consumers are willing to pay more for advertised (name-brand) products while other consumers believe that private-label products are the same as name-brands in regards to overall quality, taste, availability, freshness, guarantee of satisfaction, clarity of labeling, and quality of packaging, among other attributes.

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⁷ Remember that, in our argument, the existence of low-end firms raises the price of the high-end products and decreases the supply of the high-end products.

Now, we state on the related theoretical literature. To the best of our knowledge, no previous study has shown that the *profits* of the high-end firms *increase* by competition with the low-end firms. In the context of market entry, however, there are some literature which argues that a new entry increases the *price* of the incumbent firm's product.⁸ Inderst (2002) considers how prices react to an increase in competition. Davis *et al.* (2004) show that a low-end firm's entry makes the incumbent high-end firm's price higher than the monopoly price.

The organization of the remainder of the paper is as follows. In the next section, we describe a simple Cournot duopoly game. In Section 3, we analyze the model by considering two cases: when there is no firm in the low-end market and when there are so many firms in the low-end market. Then, we derive the Cournot-Nash equilibria in each case and we derive the main result. The last section is the conclusion.

2 Model

We consider an industry with two differentiated products (h and l). For convenience, we call h (l) high-quality (low-quality) products, respectively. There are two major firms (1 and 2) which produce h at a constant marginal cost normalized to zero.⁹ No fixed cost is assumed for the production. In this paper, quantity competition is assumed. Let q_i be firm i 's output level. In addition, define $q = (q_1, q_2)$.

We assume two groups of consumers, H (the high-end market) and L (the low-end market). For simplicity, we consider a polar case on the heterogeneity of consumer groups. Consumers in H demand only h . That is, the quality of l is not at all sufficient for consumers in H .

[Figure 1 here]

⁸ In this context, we consider a situation that competition with the high-end and low-end firms occurs by the low-end firms' entry.

⁹ Although the two firms are only players in our game, we also implicitly consider firms which produce l at a constant marginal cost normalized to zero. In the next section, we analyze two cases: (i) no firm in the low-end market; (ii) perfect competition in the low end market.

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