The Effect of New brand's Entry on the Price Strategy of Incumbent Retailers

Suhhyue Lee*

According to Resource Dependence theory, an organization's behavior and strategy is affected by external resources. An organization has diverse resources interacting with environment. Because organization cannot focus on all those resources, it concentrates on its critical resources. In market environment, firm responds to other firms by controlling their internal critical resources or manages interdependency with environment to get market share. Thus Firm should choose best behavior and strategy when internal and external resources are change. When new brand enters, incumbents might change their strategy to protect their market share depending on critical value. More precisely, incumbents sharing market with entrant respond, but incumbents having competitive internal resources do not. In this article, we study incumbent's responses to a new brand entry and long-term effect. We show that how incumbents change their price strategy in reaction to the new brand' entry and also show these responses vary depending on interdependency of internal resources and external environments and ownership.

Key words: New brand, Price Strategy, Market Commonality, Resource Similarity, Ownership

According to Resource Dependence theory (Pfeffer, 1978), an organization's behavior and strategy is affected by external resources. Because an organization has diverse resources interacting with environment, organization concentrates on its critical resource among them. In market environment, firm responds to market condition by concentrating its internal critical resources or manages interdependency with environment to get market share and discretionary power. Thus firm's behavior and strategy becomes more competitive concerning interdependency of internal and external resources. When new event occurs and it causes off-balance in market, firm decides whether stay or change. If a firm has competitive internal resources, it stays. If a firm

---

* Yonsei University Department of Business(suhhyue@hotmail.com)

is affected by new event, it changes its strategy to accommodate market condition. Thus new event makes market more competitive in short-run, and it makes balanced market by lowering entry barrier in the long-run. Through this process, market makes balance and firm is progressed.

The reasons that the market loses balance are as follows. First, when economic condition changes suddenly, exogenous variables could affect firm's production, cost and marketing strategies. Second, when new technology develops at rapid race, "Blue Ocean", which is completely different with traditional market, could appear. For example, digital camera occupies market instead of film camera, or offset press manufactures confronted with digital printing. Last one is the introduction of new brand. The introduction of new technology, opening of a new field, changing market condition and entering new brand, all of them have something in common that new event causes lower entry barrier and also it makes new balanced market.

When new brand enters, incumbents respond to protect their market share. More precisely, incumbents influenced by exogenous resources respond, but incumbents having critical internal resources do not. New brand might be an attack as how much it influences to incumbents. When new brand enters and it simultaneously threatens several incumbents in market, it is expected to provoke many responses. When confronted with new brand at first, incumbents

need to decide how long they can remain passive. If the attack has no direct effect, incumbents retain their existing strategy. As Kardes and Kalyanaram (1992) emphasize the order of entry effect, frontier firm may stay because it already has competitive in market. On the other hand, if the attack has direct affect, incumbents may respond. When incumbents recognize a new event as a threat, additional cost or loss, they change their interdependency with exogenous variables rather than stick to independent strategy to protect market power. As Expectancy-Valence theory (Atkinson, 1964; House, 1971; Vroom, 1964) said, firms establish their strategy for expected outcomes. Thus when a new brand enters, the most important thing that firms consider is interdependency with external environment and internal resources based on expectancy-valence theory. As for their expectations of result, they decide whether they adjust their strategy or not.

Previous research much did in new brand entrance and incumbent's strategy responses. Because low-price strategy can reduce the market share penalty for being a later entrant (Dean, Lester and Lesley 2012), new brand adopts flexible price strategy to gain market share and to lower loyalty of pioneer. Also competition between Private brand and incumbent become more intense when quality makes no difference (Dhar and hoch 1997). Competition can be very intense with prices and profits easily eroded when comparable resource endowments

and market positions face one another. (Baum & Haveman 1997; Deephouse 1999; Gimeno & Chen 1998). If the dominant brand enjoys a strong asymmetric competitive advantage, a differentiated strategy is optimal. If the asymmetric competitive advantage of the dominant brand is weak, a challenger strategy is optimal (Carpenter and Nakamoto 1990). Firms that differentiate their resources and market position from competitors become insulated from the actions of rivals. (Lieberman and Asaba 2006). New brands can be recognized differently depending incumbents' different resources. If incumbents have similar internal resources, for example financial condition and tangible/intangible resources, it will be threat. Besides, if new brand enters common market competing with same target customer, it will also be threat. In conclusion, incumbents set strategy according to their status or market condition.

However, much less consider of entrant's ownership. Firm's ownership affects Market Orientation and Performance in mixed oligopoly (Nett, 1990). Market Orientation is the Organizational culture that most effectively and efficiently creates the necessary behaviors for the creation of superior value for buyers and, thus, continuous superior performance for the business (Aaker 1988; Kohli and Jaworski 1990; Kotler 1984; Kotler and Andreasen 1987; Peters and Austin 1985; Peters and Waterman 1982; Shappiro 1988; Webster 1988). In other words, Market Orientation is the appropriate response for current and future customer needs. And market-oriented firms endeavor to adjust customer's needs and it leads to increase performance and profit (Narver and Slater. 1990). Because firm's ownership affects market originality and in turn firm's performance, incumbent's price strategy will be different as entrant's ownership. Thomadsen (2005) analyzed that firms' ownership and location influence its price and showed that market leader firm's price are higher than weaker firm. Who owns, who controls and to whom for benefit (Cook, 1995) affect market powers. In conclusion, having market power is a key to new brand's entering strategy and it also affects incumbents differently based on the Expectancy-Valence theory.

Also rarely have the researchers studied the long-term effect of new brand entrance. New brand entrance can be an attack in market in the short-run. But if firm's positions are held constant in the long run, the Nash equilibrium will exist (John R. Hauser, 1998). The Nash equilibrium will be repeated in balance and off-balance as firms' interdependency with resources and environment changes. When new brand enters, the degrees of attack are different as how much market is overlapping and how much resources are similar with incumbents. Thus, long-term market balance will be converged as interdependency of both factors and price strategy will be almost similar.

The purpose of this research is to study incumbent's responses based on the interdependency

of internal resources and external environment both short-term and long-term especially according to different type of ownership. This study bridges a gap in incumbents' response about new brand entry by event study changing its time window short or long. From this research, we contribute to identify how incumbents respond differently as entrants' ownership and how firm's price strategy changes as time goes on.

Research questions are as follows.

1. *When new brand enters, are the price strategies different from incumbent's internal resources?*
2. *When new brand enters, are the price strategies different from incumbent's external environment?*
3. *If new brand's ownership is different, are the incumbent's responses different?*
4. *How do the Incumbents' responses change in the long-term?*

The scopes of goods are extended to unexpected filed. Energy market is one of that. In past, Energy industry was government owned, managed and even supplied to consumer. Recently this market has been changed to a competitive market because consumer's information, preference and choice to use energy are sensitive same as other goods. Especially gasoline market is already perfect competition market in retail. Because consumer purchases it very often and the price is volatile, gasoline market fits to analyze market change and firm's responses. At 2011, Korean government implemented new distribution policies and new brand entrance was one of those policies. Thus we can analyze new brand entry's effectiveness to incumbents whenever each firm enters its local market.

In this article, we study incumbent's responses to a new brand entry and the consequences of these reactions in the long-run. The specific objectives are (a) to quantify how incumbents decrease their price in reaction to the new brand entry; (b) to examine how these responses vary depending on interdependency of internal resources and external environments and also ownership; (c) to examine how incumbents' price strategy change in the long-run. We organize the rest of this article as followers: First, We present the conceptual framework and hypotheses. Second, we discuss the data and methodology. Last, we present empirical results and discuss their key implications.

Ⅰ. Conceptual Framework

As Expectancy-Valence theory (Atkinson, 1964; House, 1971: Vroom, 1964) said, firm establishes its strategy for expected outcomes. An organization established its strategy to achieve goals. Goal is a basic motivation theory. Vroom suggested valence, instrumentality and

expectancy to other motivational factors. Valence is an affective orientation toward particular outcomes and it can be basic motivation for firms to decide whether change or stay their strategy. Thus Expectancy-Valence theory is that firm can adjust its strategy based on their expected outcome and probability in addition to goals. When new event occurs and it loses the balance of the power of market, firm decides whether to stay or change. If firm has competitive internal resources, it takes competitively differentiate strategy. If a firm is inferior, it changes strategy to accommodate market condition.

This phenomenon will frequently happen when new brand enters market. If new event recognized as an attack to incumbents, strategies of price and marketing mix of incumbents will be changed and the balance of whole market will be broken. Differentiated new brand's entry could be "centrality of attack", but degree of attack will be different according to incumbents' resources. Especially, if core strategy of new entrant is overlapping with product assortment, positioning, location or price, incumbents perceive it as threats. Distinctive strategy of new entrant sets the stage for increasing market share.

Such strategic change is consistent in gasoline market. The variables ignite competition in gasoline market are location, additional service and brand marketing etc. Padmanabhan and Seetharman(2007) analyzed econometric model of location and price in gasoline market. Also

Price and non-price strategies in gasoline market are related with local market characteristics (Iyer and Seetharaman, 2008). When a new brand enters, it chooses strategies among price and non-price strategies. Concerning that Gasoline market is price-sensitive market, price strategy is most popular strategy and especially new entrant might choose low-end strategy. Thus we analyze incumbents' reaction to low-end price attack. When a new brand enters with low-end price strategy, incumbents within same region will also decrease their price.

H1: New brand entrance will decrease incumbents' price in price-sensitive market.

Organization has interdependence with its environment and the most direct method for controlling is to control the source of that dependence (Pfeffer and Salancik, 1978). The resource-based view of the firm seems particularly useful in differentiating competitors from a strategic point of view (Amit & Schoemaker, 1993; Barney, 1991; Mahoney & Pandian, 1992; Teece, Rumelt, Dosi, & Winter, 1994) Resource similarity is defined as the extent to which a given competitor possesses strategic endowments comparable, in terms of both type and amount, to those of the focal firm (Chen 1996). If a competitor possesses strategic endowments compare, in terms of both type and amount, to those of the focal firm, organization has resource similarity. The understanding of resource sim-

ilarity is important for competitive advantage because firms with similar resource bundles are likely to have similar strategic capabilities as well as competitive vulnerability in the marketplace. For example, when Wal-mart enters, Low-end grocery stores targeting same high-elasticity consumer lower the price than stores with high quality and differentiate service (Basker & Noel, 2009). The more resources are analogous with new brand, the larger incumbents' retaliatory responses. In this article, we use resource similarity as a variable to measure incumbents' responses.

Most incumbents will have countervailing power as retaliatory responses in accordance with new brand's strategy (Galbraith, 1952). The stronger the effect on market share of new brand's attack, the bigger incumbents' responses. The existence of market power creates an incentive to the organization of another position of power that neutralizes it. Super stores belonging to profitable company will not response on price and promotion but response on assortment. But EDLP store having similar position with Wal-mart will not response on price but will response on promotion and assortment (Aliwadi, 2010). Thus countervailing power is different with incumbent's internal resources. When Wal-mart enters, the effect of entry is explained by Seriousness of the Threat and Capacity to Withstand the Threat (Gielens, 2008). The more differentiate on assortment and positioning in seriousness of the threat, the larger of financial capacity and Organizational capacity in Capacity to Withstand the Threat.

In this study, we analyze that plenty of internal resources affects on incumbents' responses. Incumbents who have much brand power and high market share will not be affected than incumbents who have less brand power and low market shared by new entrant. Gasoline market in Korea is monopoly market that only 4 firms exist. These 4 firms have different market share by brands and these market share identify with brand equity. Thus the higher incumbents' brand equities are the lower incumbents' responses. Incumbents who have plenty of human resources will not be affected than incumbents who have scarce human resources. Because human resources are an asset that produces added value, incumbents who have scarce human resources provide limited service that made by people. Thus human resources are variable to analyze internal resources. The more human resources incumbents have, the lower incumbents' responses. Last, marketing mix that incumbents provide is also one of variable. Because incumbents having facilities are differentiating in positioning compared to new entrant, if incumbents provide more facilities, incumbents will not response. Like bundle products, Car wash, Repairs and CVS are additional service in gasoline market. The more additional services incumbents have, the lower incumbents' responses.

H2: The more analogous to Resources with new brand, the lager incumbents' price decreases.

H3: The more plentiful incumbents' internal resources, the lager incumbents' price decreases.

H3a: The higher incumbents' brand equities are, the smaller incumbents' price decreases.

H3b: The more human resources incumbents have, the smaller incumbents' price decreases.

H3c: The more additional services incumbents have, the smaller incumbents' price decreases.

Another variable to incumbent's response is market commonality. Market commonality is the degree of presence that a competitor manifests in the markets it overlaps with the focal firm (Chen, 1996). Prior research of new brand did much on spatial differentiation. Stores located in same region have same target market boundary. The degree of competitiveness is diminished as distance is far from target market (Orhun, 2005). The variables to measure market commonality in Gasoline market are product, brand, location and services. But consumer cannot distinguish product in gasoline market. Thus in retailing, most important thing to consider among exogenous market characteristics is location. All firms exert a negative effect on competitors when they are in close distance, and the effect diminishes as distant. Because they share buying power in closer distance bands than in distant. Price is changed as near gas station's price in gasoline market (Lewis, 2008). As for distance and density of nearest region, the more market commonality, the larger incumbents' retaliatory response. In this article, we use market commonality as a variable to measure incumbents' responses. Chan (2007) used 1-mile radius of station to measure competitiveness in gasoline retail market. Because Korea uses length scale as kilometers, we use 1-km radius of station to measure market commonality.

In this article, we analyze the competitiveness of external environment' effect on incumbents' responses. Incumbents whose market is competitive will be affected than incumbents whose market is non-competitive. In general, Region where market size is small is more competitive than region where market size is large. Thus the smaller incumbents' market size, the larger incumbents' price decrease.

Regions where incumbents' price level is low are more sensitive in prices than regions where incumbents' price level is high. In general, Region where price level is low is more prices sensitive and competitive than region where price level is high. The lower price level is the larger incumbents' price decrease.

H4: The higher overlapping market com-

monality with new brand, the lager in-
cumbents' price decreases.

*H5: The more competitive are incumbents'
external environment, the lager incumbents'
price decreases.*

    *H5a: The smaller are incumbents' market
size, the larger incumbents' price
decreases.*

    *H5b: The lower price levels of incumbent,
the larger incumbents' price decreases.*

When new brand enters, the width and depth
of incumbents' reaction are various, according
to exogenous market characteristics and inter-
dependence with internal resources and those
environments. Retaliatory responses are differ-
ent from market-specific characteristics and
incumbent-specific characteristics. Also when
the interdependence with focal firm is asym-
metric, incumbents takes different strategies.
As Wal-mart's entry has had different effect
on Target and Costco (Ailawadi at al, 2010),
incumbents have different strategy based on
their own internal resource.

When we consider interdependence with fo-
cal firm, we have to examine the type of focal
firm. There are several type of Focal firms.
One is Private firm that maximize its profit,
another is Cooperation that maximize member's
benefit and the others is Public firm that
maximize social surplus. To look up firm's type,
we consider the relationship of Market orientation
and firm's performance. Market orientation is
the organization's culture that most effectively
and efficiently creates the necessary behaviors
for the creation of superior value for buyers
and, thus, continuous superior performance for
the business (Aaker 1988; Kohli and Jaworski
1990; Kotler 1984; Kotler and Andreasen 1987;
Peters and Austin 1985; Peters and Waterman
1982; Shappiro 1988; Webster 1988). In other
words, Market Orientation is the appropriate
response for current and future customer needs.
Thus Market Orientated firm may adopt its
strategy to customer's needs to find out mar-
ket opportunity and also higher firm's perform-
ance and profitability. If firm's ownership is in-
dependent, firm is more flexible to strategy and
price. Because firm's ownership affects Market
Originality and also firm's performance (Narver
and Slater, 1990), Independence of firm's own-
ership is positively related with Market ori-
entation and Market orientation is positively
related with firm's performance.

In mixed oligopoly, public and private owner-
ship will affect market orientation and firm's
performance (Nett, 1990). Private firm is most
market oriented and public firm is least market
oriented. This assumes that private firm's pur-
pose is profit maximization and public firm's
purpose is increase social surplus. Cournot-type
simultaneous move game or Stackerlberg-type
sequential move in mixed oligopoly has differ-
ent result as for which firm is a market leader.

When private firm is a market leader, social

surplus and consumer surplus is increased (Hiroaki and Toshihiro, 2010). Public firm's marginal cost is higher than private firm because pays higher information sharing cost. Also public firm has low performance because public firm is safe in bankruptcy and M&A and doesn't need to lower cost and raise its competitiveness. When public firm is a market leader, private firm regards it as reference price and never lower its cost and price. This result has different result when ownership interacts with location. Showing up different type of ownership is not affect to market, it only affect when ownership interacts with location (Raphael 2005). When public new brand enters in mixed oligopoly, the more highly overlapping it is in market commonality, the lager incumbents' price decreases.

Strategic differences exist also if ownership is cooperation type. Cooperation is for user-owner, user-control and user-benefit (Cook, 1995). Traditional cooperation has function that it buys goods from members for best price and sells goods to customers for a reasonable price. Because cooperation is operated not for owner but for all members, the optimization of resource allocation, investment and managerial regulation is similar to public firm. On the other hand, cooperation has something in common in that it maximizes profit, but the difference is not for the owner, but for the members. Recently re-engineered cooperation was innovated in managerial regulation. Re-engineered cooperation encouraged involving non-members in control and ownership and it is progressed as entrepreneurial cooperation. Entrepreneurial cooperative firm adds to the market orientation and performance of the cooperative firm (Kyriakos at all 2004). Thus re-engineered cooperative firm is an intermediate form of private and public. When cooperative new brand enters, the more highly overlapping it is in resource similarity, the larger incumbents' price decreases.

> *H6: Different type of ownership will have different effect on incumbents' responses*
> > *H6a: When private new brand enters, the more highly overlapping in resource similarity and market commonality, the larger prices incumbents' decreases.*
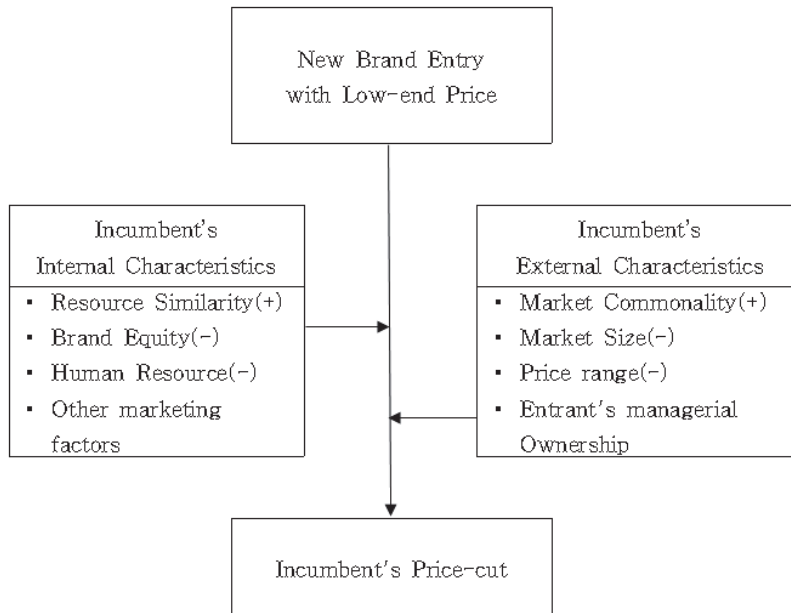> > *H6b: When cooperative new brand enters, the more highly overlapping in resource similarity, the larger prices incumbents' decreases.*
> > *H6c: When public new brand enters, the more highly overlapping in market commonality, the larger prices incumbents' decreases.*

II. Model and Data

2.1 Conceptual Model

<Figure 1> Conceptual Framework

New Brand Entry
with Low-end Price

Incumbent's
Internal Characteristics
- Resource Similarity(+)
- Brand Equity(-)
- Human Resource(-)
- Other marketing
  factors

Incumbent's
External Characteristics
- Market Commonality(+)
- Market Size(-)
- Price range(-)
- Entrant's managerial
  Ownership

Incumbent's Price-cut

2.2 Data

Korean government announced to introduction of new brand in retail oil market in summer 2011. New brand will be about 5% cheaper than incumbents. It reduces distribution cost and supplies lower price. Korean governments gave incentives to new entry and encourage changing. Government bids wholesale price to supply lower price and also subsidizes expenses to settle down. First gas station of new brand opened at Nov 29th 2011. We analyze 950 new brand entries that occurred during Nov 2011 to April 2013. The first one opening is Nov 29th 2011 and the last one is March 1st 2013. We use daily store price data of 11,856 experimental and control stores belonging to four retail chains and 1 self-brand, covering the control and estimation period from Nov 1st 2010 to 150 days after each new brand entry.

The data are provided by Korea National Oil Corporation (KNOC). KNOC gather, analyze and offer oil price based on Korean Petroleum Business Act. KNOC operates Oil Price information Network (www.opinet.co.kr) and offers informations of oil market in diverse format. KNOC gets price information from credit VAN (value added network) company automatically and prices are updated 6 times a day. We use average price of a day to use analysis.

2.2.1 Sample selection and composition

We used market information from KNOC and

store opening information from Ministry of Trade, Industry and Energy. First we divided each city by administrative district assuming that gas station price is different to city. We selected all stores that (1) reported retail activities, (2) there was no existing New brand entry within a 1-kilometers of the new brand or not and (3) did not previously have a new brand within a 1-kilometers radius or if they had a pre-existing new brand, it had opened more than quarters before. Next we eliminated stores that switched brand and shut down in control period. We further eliminated retail stores whose region had no opining new brand. And also we match stores according to new brand's ownerships: Private, cooperatives and Public.

2.2.2 Operationalization of the Measures

We study reaction by internal resources and outside environment.

Abnormal Price. We used daily selling prices from Opinet to calculate the observed actual prices P_{it}. For P_{mt}, we used the daily international oil market indexes which is Singapore 92RON petroleum price calculated by exchanged rate as reported.

Resource Similarity. Overlap in resource similarity reflects the extent to how much the critical resources are similar with new brand. Preexisting 4 retail chains are belonging to petrochemical company each. They have same brand wholesale suppliers and credit card discount policy. Because these 4 chains have brand power and market share, they have similar positioning though it can be different across region and situation. But 1 self-brand is independent owner. Because it has no vertical relationship with petrochemical company and no brand power, it has low-end price strategy. The sample comprised 1,634 self-brand stores and 38,031 brand stores including changing retail shop owner.

Plentiful of Internal Resources. Having more resources means that incumbents will stay rather than response. Brand equity reflects the degrees how much the incumbent's market shares are. Human resources reflects value-added that employer creates. Other marketing variables capture whether the incumbents provide additional services.

Market Commonality. Overlap in market commonality reflects the extent to how much incumbents share target market with new brand. Because Korean government abolished limited distance of each gas station at 1997, there are sufficient competitions in oil market. The sample comprised 5235 "experimental" stores from 5 chains which exist within 1km radius of new brand entries and 34,420 "control" stores which exist outside 1km radius of new brand entries.

Competitiveness of external environment.

Competitive market means that incumbents will response rather than stay. Market size reflects the extents to which markets, in which an incumbent retailer meets new brand, are more customers. The more customers in the market, the less competitive the market is. Price range reflects the extents to which markets are more price sensitive. The higher price in the region, the less competitive the market is.

〈Table 1〉 presents descriptive statistics of Gasoline market in Korea used in the empirical study. We also did multicollinearity test of each variables. In our case, the absolute value of all correlations is below 0.65 thus there is no multicollinearity problem.

〈Table 1〉 Descriptive Statistics of Gasoline market in Korea Market share

Brand	%
SK Energy	32.46
GS Cartex	23.29
Hyundai Oilbank	18.20
S-oil	15.42
self brand	3.86
Private New brand	2.71
cooperative New brand	2.97
Public New brand	1.15

Management type

Store type	%
Brand retail store	7.5
Independent store	92.5

Adjacent to New brand

Distance	%
1km radius	13.2
3km radius	30.79

Additional Service

Service	%
Self Service	9.25
Car Wash	28.9
Repair Service	8.52
CVS	7.28

Ⅲ. Methodology

3.1 First-Stage Analysis: Estimating variables for retail price

Prior to analyze new brand effect to incumbent, we analyze how retail price of gasoline market is first. The variables which affect retail price are composed three dimensions: cost, competitiveness and demand. We estimate the following model for each store in Seoul.

$$P_i \ = \ b_0 \ + \ b_1X_i \ + \ b_2Y_i \ + b_3Z_i \ + e_i \qquad (1)$$

X_i is the vector that represents cost. Cost vector has several variables like brand type, management type, land price, the number of pump, Car wash, Repair and CVS. Y_i is the vector that represents competitiveness. Competitiveness vector has several variables like the number of gasoline station within 1km radius, distance to other gasoline station, adjacent to new brand within 1km radius and adjacent to self-brand within 1km radius. Z_i is the vector that represents demand. Demand vector has several variables like the number of company in that region, the number of car in that region and Road type where the gas station is located. And e_i is a vector of residuals of that model.

3.2 Second-Stage Analysis: Event Studies

We use an event study to calculate the abnormal price for incumbents as a result of new brand entry. We calculate these abnormal prices over a time window centered on the opening day of the new brand. Next we estimate regression models of abnormal prices cross-section to interdependence with internal resources and external market environment. And also we estimate a regression model for each store- and market-characteristics across entry's ownership category.

3.2.1 Event studies

Abnormal Return methodology is widely used in Economics and Financing to measure event's impact. The abnormal return is the difference between the actual ex post return of the security over the event windows and the normal return of the firm over the event windows. Because we observe price change after event, we regard new brand store's open day as an event day and examine incumbent's price change before and after event. We have an assumption that oil market is fully competitive and the information is shared to all other stores. Under this assumption, the market price of the store changes immediately and unbiasedly for new information. When new information is disseminated, Firms reflect this event information thus strategy and performance is changed im-

mediately (Brown and Warner, 1995).

In Abnormal Price model, the observed price P_{it} on the event day is compared with $E(P_{it})$ which is expected price if the event had not occur. As for Brown and Warner's(1985) approach, we use the market price to obtain estimates of retailer's expected prices.

$$P_{it} = \alpha_i + \beta_i P_{mt} + e_{it} \qquad (2)$$
$$E(P_{it}) = \alpha_i + \beta_i P_{mt} \qquad (3)$$

Where P_{it} and P_{mt} denote the price on day t for i stores and market price on day t, respectively, e_{it} represents a store-specific price, and the parameters σ, β specify the linear structure of the market model. By the assumptions of the market model, the store-specific price of i store e_{it} is not related to the overall market thus has a zero expected value.

Adjusting the observed event date price for store i by subtracting the expected return represents an abnormal price for store I.

$$AP_{i0} = e_{it} = P_{i0} - E(P_{i0}) = P_{i0} - (\alpha_i + \beta_i P_{m0})$$
$$AP_{it} = e_{it} = P_{it} - E(P_{it}) = P_{it} - (\alpha_i + \beta_i P_{mt})$$

For comparison and to determine statistical significance, the market model parameters σ and β are obtained by an ordinary least-squares regression of each store price P_i on market price P_m over the control period. The control period contains beginning 400 days before of event and ending 8 days before the event day.

The event day abnormal price P_{i0} is then assessed for statistical significance relative to the distribution of abnormal price AP_{it} in the control period

To capture effect as time goes on, we aggregate the abnormal prices for a store over the "event period" $[t_0, t_7]$ into a cumulative abnormal price (CAP).

$$CAP_i[-t_1, t_2] = \sum e_{it} \qquad (4)$$
$$CAAP[-t_1, t_2] = \sum CAP_i[-t_1, t_2]/K \qquad (5)$$

where $t = 0$ on the event day. Because we conducted the event study across K different stores, this CAP can be averaged into a cumulative abnormal price(CAAP);

We assess the significance of the AAP through patell's (1976) t-statistics. This statistic reduces the effect of large price standard deviation. The effect of new event is determined on the basis of the significance of respective daily average abnormal price(AAP) terms on the days surrounding the event day.

3.2.2 Test of Moderator Effects

We test our Hypotheses on the differential effect of New brand entry on incumbent stores through a cross sectional regression on the abnormal prices:

$$CAAP_i[-t_1, t_2] = \beta_0 + \beta_1 RS_i + \beta_2 MC_i + \beta_3 BE_i + \beta_4 HR_i + \beta_5 CW_i$$

$$+ \ \beta_6 \text{Repair}_i \ + \ \beta_7 \text{CVS}_i \ + \ \beta_8 \text{Pregion}_i$$
$$+ \ \beta_9 \text{Car}_i \qquad\qquad\qquad (6)$$

Where RS denotes Resource Similarity and MC denotes Market Commonality. BE, HR, CW, Repair and CVS denote the plenty of internal resources in Brand Equity, Human Resource, Car Wash, Repair and Convenience Store respectively. Pregion and Car indicate the competitiveness of external environment in Price region and the number of car in that region. We use CAAPi as the dependent variable to compare the effect between short-term and long-term.

Ⅳ. Empirical Analysis

4.1 First-Stage Analysis: Estimating for retail price

Prior to analyze new brand effect to incumbent, we analyze how retail price of gasoline market is first. To capture the variables composed retail gasoline store's entire price, we analyze 642 gasoline stores in Seoul. 〈Table 2〉 represents Descriptive Statistics of Gasoline market in Seoul.

We can see market share of each brand in Seoul at April 2013. SK Energy is 40.9%, GS Caltex is 29.9%, Hyundai oilbank is 13.9% and S-oil is 10.7%. Location is one of the most important variables to decide store's price. Each store has different cost, customer and also market size according to location. Inversely, each store has different sales quantity or performance though they set a same price. Thus location and land price means locational position and even more it includes opportunity cost. Land price is different depending on brand and management type. Company branch stores are most expensive. Company branch's land price is $6000 per m^2, Agency branch's land price is $5700 m^2 and Independent store's land price is $4900 per m^2. Also high market share companies are higher land price. It means starting branch stores are located in better condition than independent stores. New brand and self-brand store's land price is about 65% and 75% of average store's land price of Seoul. And 84% of gasoline stations are located in main street. Each store's additional services could also affect to selling price. Stores which have Car Wash are 59%, repair are 32% and CVS are 13% in Seoul. Stores have 12 pumps in average and self –service stations are more in SK Energy and GS Caltex brand. For competitiveness variable, all of gas stations except only 4 stations are located adjacent to other gas stations within 1 kilometer radius. Gasoline station has 4.7 stations within 1km radius on average and average distance to most adjacent gas station is 404 meter. Gas stations that are located adjacent to new brand within 1 kilometer radius are 42 and to self-brand within 1 kilometer radius is 66.

We gathered data 7 times on April 1st, 6th,

<Table 2> Descriptive Statistics of Gasoline market in Seoul

Market share and Management type

	Company branch	Agency branch	Independent	total
SK Energy	77	35	149	261
GS Caltex	72	44	75	191
Hyundai oilbank	36	0	53	89
S-oil	14	2	52	68
New Brand	0	0	13	13
Private Brand	0	0	20	20

Land Price

(Won/m^2)

	Company branch	Agency branch	Independent	Average
SK Energy	6,221,240	5,723,929	5,527,905	5,824,358
GS Caltex	6,397,843	6,111,475	5,625,934	6,045,084
Hyundai oilbank	6,160,000	0	5,280,508	5,570,341
S-oil	5,459,587	5,465,000	5,284,077	5,462,088
New brand	0	0	3,657,143	3,657,143
Self-brand	0	0	3,995,625	3,995,625

Location

Road type	%
road with 50-70m width	15.82
road with 30-50m width	23.06
road with 12-30m width	8.40
road under 12m width	13.02
intersection with main road	61.29

Additional Service

	Car Wash	Repair	CVS
count	360	164	79
Percent	58.82	32.03	12.91

Self-service and pump

	SK Energy	GS Caltex	Hyundai oilbank	S-oil	new brand	self-brand
Self	28	24	6	2	0	0
Pump	14	13	12	12	12	9

<Table 2> Descriptive Statistics of Gasoline market in Seoul (continue)

Competitiveness with minority store

	Count
near with new brand	42
near with self-brand	66

Competitiveness

	Count
Gasoline station within 1kim radius	4.72

Distance to other gasoline station

	meter
Distance to other gasoline station	404.9835

Regional Characteristics

	Count
CAR	105264
company	30925

11th, 16th, 21th, 26th and 29th and regressed it using April 1st and average price of April as dependent variable with Ordinary Least Squares.

First, we did regression with all variables. For cost variables, the higher the land price, the higher the price is. Self-service store's price is cheaper. And stores with Car wash service are more expensive. For competitiveness variables, the more the number of stores within I kilometers radius, the lower the price is. And stores which is located within 1 kilometers radius of new brand sells cheaper price. For demand variables, the closer with the main load, the higher the price is. The more cars in that region, the lower the price are. On the contrary, the more company in that region, the higher the price is. The number of car means how the market is competitive and the number of company means how higher the economic condition in that region. From that result, we know selling price of gasoline is different with regional characteristics. If we control influence of regional difference, we can get more accurate results. But the number of cars and the number of company can cause multicolliniarity. We test correlation coefficient, but there was no multicollinearity. In conclusion, gasoline station's price is mostly affected by competitiveness variables among cost, competitiveness and demand.

4.2 Selection of variables and analyzing the effect

To select meaningful variables among cost, competitiveness and demand, we select variables by forward stepwise regression. In cost variables, SK Energy, GS Caltex, self-brand, log of land price, self-service, Car Wash and CVS are selected. In competitiveness variables, the number of adjacent stores within 1kilometer radius and store within 1 kilometers of new brand are selected. In demand variables, the number of company, the number of cars and location are selected.

〈Table 3〉 represents the result of regression with variables selected with stepwise regression. The result is as follows: Brand and market share affects selling price. SK Energy station is expensive 7.6 cents more, GS Caltex is expensive 5.6 cents more and self-brand is cheaper 4 cents less. Whenever the width of land is increased by 10 times from $10m^2$, the price goes up by9.7 cents more. The reason we take log land price instead of land price is that the land price cannot increased infinitely as the width of land is increased. The gasoline station with car wash takes higher selling price and the station with repair takes lower selling price. Because customer uses car wash very often and the stations provide car wash service like

〈Table 3〉 Result of regression with variables selected by Stepwise

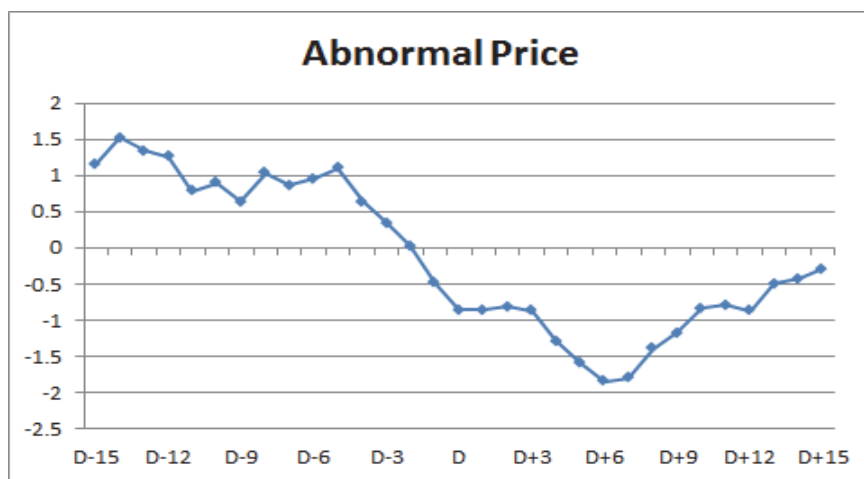|	Price of April 1st 2013	
Variables	Parameter Estimate	t Value
Intercept	1313.9	11.37***
SK	75.53	8.55***
GS	52.81	5.57***
Hyundai	8.02	0.74
S-oil	11.38	0.59
self brand	-40.77	-2.78**
Self	-90.65	-7.48***
Wash	18.56	2.52**
Llandprice	97.09	5.37***
road with 30-50m width	14.62	2.35**
competitiveness	-6.82	-4.3***
Adj with new brand	-30	-2.34**
CAR	-0.43	-3.68**
company	0.003	8.36***
N=597	R^2=0.57	

***p〈0.001 **p〈0.01 *p〈0.05

a bundle product with refuel as discounted price, the gasoline stations with car wash have incentives to set higher price for refuel. But repair service, to attract customer to use repair service, the gasoline stations with repair service set lower price and promote that service. CVS is not affect to selling price of gasoline station. It means CVS is independent with gasoline station in profit structure. The more the number of stations within 1kilometer radius, the lower the price is as 0.7 cents. And if gas station is located within 1 kilometer radius of new brand, selling price of that station is cheaper 3 cents less. Adjacent to other gas station especially new brand is important to lower the price. The effect of new brand will be analyzed in second stage. Also accessibility is important factors to influence selling price. The gas station located in main road is cheaper 1.5 cent more. The more the number of company in that region, the higher the price is.
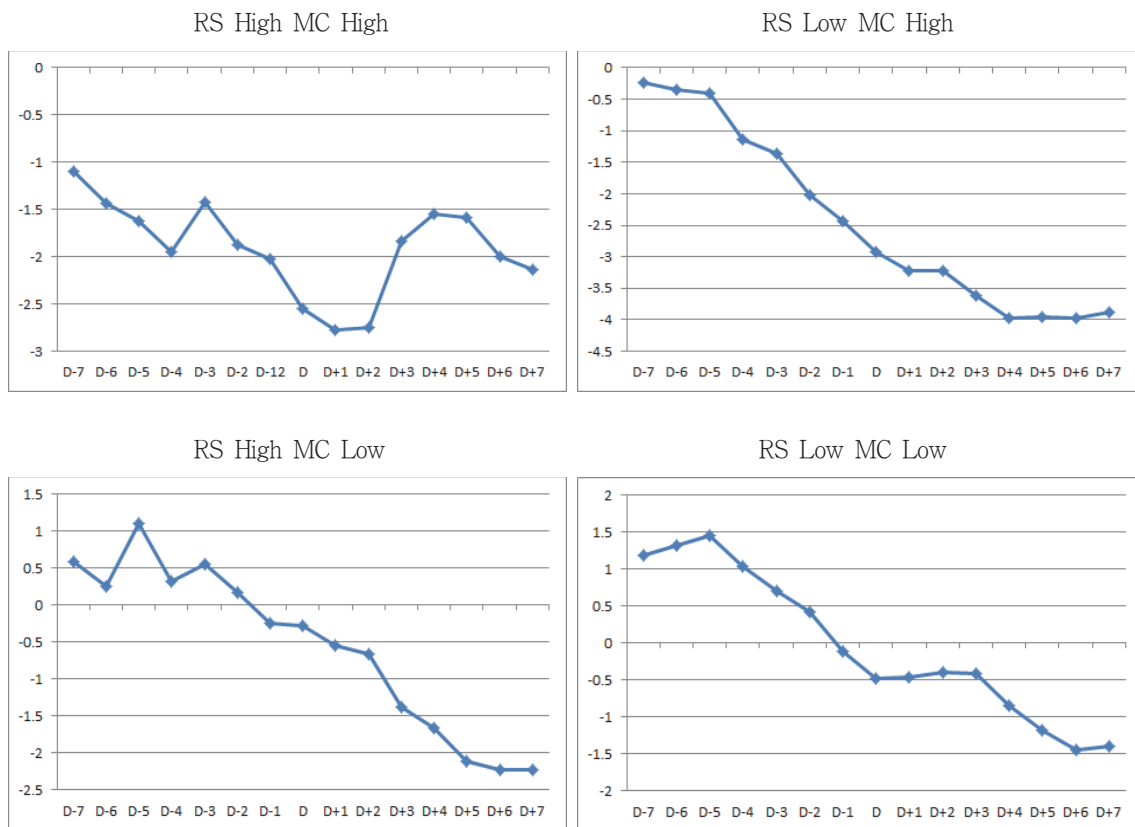
4.3 Second-Stage Analysis: Event study

〈Figure 2〉 represents price change of 15 days surrounding event. New store open is not same as event announcement and incumbent may react in advance. Though time window we use in analysis is $[-t_7, t_7]$, we look up price change surrounding 15 days of event. As we expected, incumbent stores lower the price after event occur. Incumbent responses 7 days prior to event day and comes back to normal 7 days after the event. 〈Figure 3〉 shows incumbent's response for different levels of resource similarity and market commonality. Incumbents with high resource similarity stay before event occurs and lower the price right before the event. In the other hand, Incumbents with high market commonality lower the price 7days before the event.

〈Figure 2〉 Abnormal Price of retail gasoline station

<Figure 3> Price change by Market Commonality & Resource Similarity

RS High MC High

RS Low MC High

RS High MC Low

RS Low MC Low

⟨Table 4⟩ presents information on daily AAPs for 39,661 retail incumbents for a window of 14 business days around the event day. On day t-1, the incumbent retailers experienced an average negative abnormal price of 0.36 Korean won, which is significant (p < 0.001). On the opening day, they experienced price cut an average 0.38 Korean won, which is significant (p < 0.001). The total average effect over Days -7 and 7 is significant. As such, our results means a formal response in price for event occur and the move took all market participants by surprise in short window.

Petroleum is similar by company and customer cannot distinguish that. Thus incumbents will lower the price to protect market share for new brand enter. H1 pertains to the incumbents caused by new brand entry. We find strong support for new bran entry's anticipated negative effect on incumbent price strategy.

We find that incumbent's overall negative price for CAAR[-7, 7]. More notable is the variation in $CAR_i[0, 7]$ across individual retailers. Although ⟨Table 4⟩ shows that most of in-

<Table 4> Average daily Abnormal Price

Day	Average Abnormal Price	Patell t-Statistics
t-7	0.8593	27.10***
t-6	0.9569	27.13***
t-5	1.1041	27.73***
t-4	0.6409	25.43***
t-3	0.3418	23.87***
t-2	0.0259	22.35***
t-1	-0.4811	20.07***
t	-0.8564	18.25***
t+1	-0.8653	17.25***
t+2	-0.8112	17.99***
t+3	-0.8676	17.44***
t+4	-1.2882	15.48***
t+5	-1.5993	13.98***
t+6	-1.8435	12.71***
t+7	-1.7964	12.78***

cumbent responses for event, those collective result cannot evaluate the entry of new brand as a unitary phenomenon, affecting all incumbent retailers equally. To understand these differentials for individual retailers, we estimated equation 6 with the individual retailer's CAAR [0,7] as dependent variable for short-term effect. <Table 5> presents the results.

4.3.1 Resource similarity and Market commonality

H2 and H4 pertain to resource similarity and market commonality of incumbent caused by new brand entry as the driver of incumbent's expected response. We find strong support for incumbents' price cut on new brand entry. The more analogous to Resources with new brand, the lager incumbents' price decreases. Also the more highly overlapping market commonality is with new brand, the lager incumbents' price decreases. Especially Resource similarity have more effect on incumbent's retaliatory responses. Because the incumbents who has similar resource with new brand has same target customer who is more sensitive to price, its cross price elasticity with new brand is more sensitive.

4.3.2 Plenty of Internal resource

H3 pertains to the plentiful of internal resource as the driver of incumbent's expected response. The effect of brand equity, H3a, is not supported. However, Human resources that

<Table 5> Short-term effect of New brand entry

Variable	Expected Sign	Cumulative Average Abnormal Price[0,7]		
		b	Std	|t|
Intercept		6.81	0.91	7.45***
Resource Similarity	−	-3.42	1.35	-2.54**
Market Commonality	−	-1.98	0.81	-2.43**
Brand equity	+	0.04	0.21	0.18
Self	−	-3.12	0.90	-3.49**
Wash	+	0.99	0.58	1.70
Repair	+	-2.65	0.98	-2.71**
CVS	+	0.95	0.95	1.00
Pregion	−	-3.19	0.46	-6.99***
Car	+	0.02	0.00	6.99***
N=389577		R2=0.33		

***p < 0.001 **p < 0.01 *p < 0.05

create added value matter. The price of incumbent retailers that have more human resources was less negatively affected than fewer retailers. The smaller incumbents' price decreases. The more additional services incumbents have the smaller incumbents' price decreases. For additional services (H3c), the incumbent retailers with additional services will be less negatively affected. But the result is different according what the services are. Incumbents with Car Wash and CVS were not affected. Repair was the factor that responses adversely. It was the same result in first stage that we analyzed the price structure of gasoline station. Repair service is not a bundle product to provide with refuels, because of seldom use and CVS is independent with profit structure.

4.3.3 Competitiveness of external environment

Generally, the price is different according to region because customer's income and the standard of living by region. Specially, there are big differences in gasoline market. To capture price difference and the trend of price change by region, we divided whole market into three regions by clustering analysis. Price Region 3 is most expensive and most asymmetric with index. Price Region2 is similar with average price. Price Region 1 is low price zone and response instantly. We expected that the region with high price policy will not be affected by new brand entry because of low competitiveness. But the result has opposite direction. The in-

cumbent retailers took high price is more flexible to price strategy because their profitability is high. Thus when new brand enters, they reduce their price temporarily to protect market share but this effect will not last long. Hypothesis H5b, the smaller incumbents' market size are, the larger incumbents' price decreases, is supported. If the numbers of cars are increased, market size will also increase. The region where market size is large is less competitive and there was no cause to lower the price.

4.3.4 New brand's ownership effect to incumbent's price strategy

We analyzed incumbent's response according to new brand's ownership. New brand's ownership means how individual retailer control their price. We measure the ownership as three types: private firm, cooperative firm and public firm. The ownership is related to set price independently. Private firm set and control its price independently. Cooperative firm that maximize member's profit set and control its price by members. Public firm that maximize social surplus set and control its price by government to adjust social benefit.

⟨Table 6⟩ represents analyzing result for incumbents' responses according to new brand's ownership. Model 1 has no interaction with Market Commonality and Resource Similarity and Model 2 has. H6 highlights the importance for new brands' ownership to incumbents' dif-

ferential responses. When private firm enters, both resource similarity and market commonality are affecting to incumbents as we expected. When there are interaction with resource similarity and market commonality, the effect is greater. Also the plenty of internal resources and competitiveness of external environment also affect to incumbents' responses. When new brand is Cooperative firm, only Resource similarity has effect to incumbents' responses in Model 1. But when there is interaction with resource similarity and market commonality, resource similarity is not significant. It means resource similarity is affected when it is located within common market with new brand. Cooperative firm enters in rural area, additional services are not so many. Thus the plenty of additional resources has only effect when incumbents have Car wash. Competitiveness of external environment is significant. When public new brand enters, both resource similarity and market commonality have effect to incumbents' responses in Model 1. But if there is interaction effect, resource similarity is not significant. In other words, resource similarity is omitted variable bias. Public new brand used in this analysis, gasoline station located in express way. Thus incumbents near public new brand are located remote and the plenty of internal resources are not affected to selling price. Same with other ownerships, competitiveness of external environment is significant.

⟨Table 7⟩ represents long-term effect of new

〈Table 6〉 Short-term effect analysis

	Cumulative Average Abnormal Price[0,7]											
	Private				Coop				EX			
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
	b	t	b	t	b	t	b	t	b	t	b	t
Intercept	11.70	10.96**	11.75	11.00***	-5.36	-4.82***	-5.36	-4.82**	15.86	9.90***	15.84	9.89***
MC	-2.20	-2.04*	-1.67	-2.25*	0.83	0.71	0.77	0.62	-26.79	-2.64**	-5.94	-2.63**
RS	-4.55	-2.66***	-3.13	-2.32*	-3.89	3.48**	-0.68	0.31	-3.26	-2.53**	-4.00	-1.06
MC*RS			-3.86	-2.96**			-3.74	-3.18**			-23.12	-3.49**
Self	-2.89	-2.44*	-2.89	-2.44**	-3.95	-2.72**	-3.95	-2.72**	-3.83	-1.57	-3.72	-1.53
Wash	1.48	1.86	1.48	1.86	3.29	3.62**	3.29	3.62**	0.95	0.66	0.95	0.66
Repair	-2.68	-2.04*	-2.69	-2.04*	-2.27	-1.48	-2.28	-1.48	-2.25	-0.88	-2.30	-0.90
CVS	1.39	1.04	1.39	1.04	0.03	0.02	0.03	0.02	0.42	0.18	0.42	0.18
Pregion	-4.33	-6.64***	-4.34	-6.66***	-2.01	-2.90**	-2.01	-2.90**	-11.72	-11.08***	-11.64	-11.00***
Car	0.02	4.63***	0.01	4.64***	-0.04	-11.22***	-0.04	-11.22***	0.13	16.41***	0.13	16.44***
	N=21972		N=21972		N=9929		N=9929		N=7164		N=7164	
	R^2=0.39		R^2=0.39		R^2=0.25		R^2=0.25		R^2=0.34		R^2=0.34	

***p〈0.001 **p〈0.01 *p〈0.05

〈Table 7〉 Long-term Effect Analysis

	Cumulative Average Abnormal Price[121,150]											
	Private				Coop				EX			
	Model 1		Model 2		Model 1		Model 2		Model 1	Model 2	Model 1	Model 2
	b	t	b	t	b	t	b	t	b	t	b	t
Intercept	-25.66	-15.52***	-25.73	-15.55***	73.55	31.13***	73.52	31.12***	-14.46	-8.90***	-14.44	-8.89***
MC	-0.52	-0.20*	-0.96	-0.32*	-3.31	-1.33	-3.99	-1.53	-2.66	-2.77**	-2.43	-2.37**
RS	-3.40	-2.14**	-5.74	-0.97*	-14.79	-3.77***	-12.68	-2.75**	1.18	0.37	-0.81	-0.22
MC*RS			-2.85	-2.54**			-7.54	-0.87			7.71	1.08
Self	-2.59	-1.42	-2.59	-1.42	-17.27.	-5.65***	-17.30	-5.65***	-3.79	-1.52	-3.77	-1.51
Wash	0.86	0.71	0.86	0.71	2.36	1.22	2.36	1.22	-0.30	-0.20	-0.29	-0.20
Repair	2.72	1.37	2.72	1.37	-4.79	-1.48	-4.76	-1.47	4.71	1.81	4.70	1.80
CVS	-3.12	-1.54	-3.12	-1.54	6.67	2.24*	6.67	2.24*	0.99	0.43	0.97	0.42
Pregion	-4.21	-4.23**	-4.22	-4.24**	-0.39	-0.26	-0.40	-0.27	-1.98	-1.84	-1.97	-1.83
Car	0.05	8.35***	0.05	8.34***	-0.19	-24.28***	-0.19	-24.29***	0.13	15.60***	0.13	15.60***
	N=17345		N=17345		N=9230		N=9230		N=6724		N=6724	
	R^2=0.41		R^2=0.42		R^2=0.47		R^2=0.47		R^2=0.38		R^2=0.39	

***p〈0.001 **p〈0.01 *p〈0.05

brand's ownership to incumbent's price. As we explained, we use time window CAAP[121, 150] to examine long-term effect. After quarter of the year of new brand enter, incumbents near private new brand response constantly. Incumbents highly overlapping in resource similarity and market commonality with private new brand lower their prices. Also competitiveness of external environment is influence factors. After quarter of the year of cooperative new brand enter, incumbents only highly overlapping in resource similarity with cooperative new brand lower their prices. After quarter of the year of public new brand enter, incumbents only highly overlapping in market commonality with public new brand lower their prices. The influences of other variables wore off as time goes by.

V. Discussion

We analyzed incumbents' responses as the degrees of resource similarity and market commonality. In addition to short-term response for "Centrality of attack", we also how long-term effect for attack will be convergence and balanced.

First, we analyzed which factors affect retail gasoline station's price. In cost variables, SK Energy, GS Caltex, self-brand, log of land price, self-service, Car Wash and CVS are selected. In competitiveness variables, the number of

adjacent stores within 1kilometer radius and store within 1 kilometers of new brand are selected. In demand variables, the number of company, the number of cars and location are selected. The regression result represents that gasoline station located in adjacent to new brand lower its price about 30 Korean won more.

From that result, we can assure new brand's effect to incumbents. When we analyzed new brand entry by abnormal price, we can find instant responses. On day t-1 and on the opening day, incumbents experienced price cut, which is significance $(p < 0.001)$. As such, our results means a formal response in price for event occur and the move took all market participants by surprise in short window. Also we find strong support for incumbents' price cut on new brand entry. The more analogous to Resources with new brand, the lager incumbents' price decreases. Also the more highly overlapping market commonality is with new brand, the lager incumbents' price decreases. Especially Resource similarity has larger effect on incumbent's retaliatory responses. Because the incumbents who has similar resource with new brand has same target customer who is more sensitive to price, its cross price elasticity with new brand is more sensitive.

H3 pertains to the plentiful of internal resource as the driver of incumbent's expected response. The effect of brand equity, H3a, is not supported. However human resources that create added value matter. The price of incumbent retailers that have more human re-

sources was less negatively affected than fewer retailers. The smaller incumbents' price decreases. The more additional services incumbents have the smaller incumbents' price decreases. For additional services (H3c), the incumbent retailers with additional services will be less negatively affected. But the result is different according what the services are. Incumbents with Car Wash and CVS were not affected. Repair was the factor that responses adversely. Repair service is not a bundle product to provide with refuels, because of seldom use and CVS is independent with profit structure.

We expected that the region with high price policy will not be affected by new brand entry because of low competitiveness. But the result has opposite direction in short term. The incumbent retailers took high price is more flexible to price strategy because their profitability is high. Thus when new brand enters, they reduce their price temporarily to protect market share but this effect will be adverse in long-term as we expected except Private brand enters. The smaller incumbents' market size are, the larger incumbents' price decreases, is supported. If the number of cars is increased, market size will also increase. The region where market size is large is less competitive and there was no cause to lower the price.

Lastly, we analyzed incumbent's response according to new brand's ownership. New brand's ownership means how individual retailer controls their price. When private firm enters, both

resource similarity and market commonality are affecting to incumbents as we expected. When there are interaction with resource similarity and market commonality, the effect is greater. Also the plenty of internal resources and competitiveness of external environment also affect to incumbents' responses. When new brand is Cooperative firm, only Resource similarity has effect to incumbents' responses in Model 1. But when there is interaction with resource similarity and market commonality, resource similarity is not significant. It means resource similarity is affected when it is located within common market with new brand. Cooperative firm enters in rural area mainly; additional services are not so many. Thus the plenty of additional resources has only effect when incumbents have Car wash. Competitiveness of external environment is significant. When public new brand enters, both resource similarity and market commonality have effect to incumbents' responses in Model 1. But if there is interaction effect, resource similarity is not significant. In other words, resource similarity is omitted variable bias. Public new brand used in this analysis, gasoline station located in express way. Thus incumbents near public new brand are located remote and the plenty of internal resources are not affected to selling price. Same with other ownerships, competitiveness of external environment is significant.

When new brand enters and it will be an "attack" to market, instant responses of in-

cumbents are various. However only incumbents with direct competitiveness response those "attack" in the long-term. Market participants' competitiveness fades away and makes market balance in the long run.

VI. Managerial Implication

The result of the data analysis above showed that entrance of a newly launched brand would affect most of all the participants that have been doing their business in the market. Degree of affection might differ in a short time period. However, in the long term it is concluded that affection would be confined to two types of existing players; one is a group that has similar internal resource, the other is the one with an external business environment. When it comes to strength of effectiveness, the closer incumbents were located to the consumers who were very sensitive to price, the stronger the effectiveness was. In addition, the more competitive the market was, the stronger the existing participant was affected. So in terms of a counter-action strategy of incumbents which have high-level of market commonality and resource similarity should lower the price as much as possible in order to minimize loss from encroaching on the market share.

On the contrary, the ones that enjoy the monopolistic status from their own separate mar-

ket or has products and service with low-level resource similarity might not suffer from loss even if they stick to the existing their own price strategy. Incumbents might be forced to react to new brands with lowering their price at first time when the new brands with high level market commonality and resource similarity enter into the market. However, they will be able to retain their market share with differentiated non-price competition in the long term, because the price gap would get to be constant in the long run.

VII. Limitation and Further Research

Limitations can be found in our research. First of all, we have generalized the analysis of the Korean petroleum distribution market. Petroleum market is where resource similarity is very high and location is an important factor to determine market commonality. In this sense, there is room for the further research on whether my generalization would be applicable to the other industrial markets which can be defined with the two criteria; resource similarity and market commonality.

Secondly, this research has focused on the influence on the market mainly from price strategy, especially low price one. In the field, customers tend to take the price into account

as top priority to decide which gas stations they go. Other than price, they consider a variety of factors such as location, promotion by using credit cards, the flow of driving, etc. So, we can rely on a further study with considering more variables that might be effective to the result by upgrading an analyzing research model.

Lastly, the price of petroleum in most of all countries is in sync with the one in the international market. Owing to the synchronized price, price asymmetry can be found when price goes up and down. In the event analysis of this research, time series were controlled in order to consider this price asymmetry. Nevertheless, the asymmetry needs to be taken into account more in further researches to make them more elaborate.

References

Ailawadi, Kusum L., Zhang, Jie, Krishna, Aradhna and Kruger, Michael W. (2010), "When Wal-Mart Enters: How Incumbent Retailers React and How This Affects Their SalesOutcomes," *Journal of Marketing Research*, 47(August), 577-593

Basker, Emek (2005) "Selling a cheaper mouse- trap: Wal-Mart's effect on retail prices," *Journal of Urban Economics*, 58(2), 203-229

Basker, Emek and Noel, Michael (2009) "The Evolving Food Chain: Competitive Effects of Wal-Mart's Entry into the Supermarket Industry," *Journal of Economics and Management Strategy*, 18(4), 977-1009

Baum, J. A. C., and Haveman, H. A (1997), "Love thy neighbor? Differentiation and agglomeration in the Manhattan hotel industry, *Administrative Science Quarterly*, 42, 304-338

Bharati, Rakesh, Crain, Susan J. and Kaminski, Vincent (2012), "Clustering in Crude Oil Price and the Target Pricing Zone Hypothesis," *Energy Economics*, 34(2012), 1115-1123

Breslaw, Jon A. and Smith, J. Barry (1995), "A simple and efficient method for estimating the magnitude and precision of selfare changes," *Journal of Applied Econometrics*, 10, 313-327

Breslaw, Jon A. and Smith, J. Barry (1995), "Measuring Welfare Changes When Quantity is Constrained," *Journal of Business and Economics Statistics*, 13(1), 95-103

Brown, S. J. and J. B. Warner (1980), "Measuring security price performance, Journal of Financial Economics, 8(3), 205-258

Carpenter, Gregory S. and Nakamoto, Kent (1990), "Competitive Strategies for Late Entry Into A Market With A Dominant Brand," *Management Science*, 36(10), 1268-

1278

Chen, Ming-Jer (1996), "Competitor Analysis and Interfirm Rivalry: Toward A Theoretical Integration," *Academic of Management Review*, 21(1), 100-134

Chintagunta, Pradeep K., Bonfrer, Andre and Song, Inseong (2002), "Investigating the effects of Store-Brand Introduction on Retailer Demand and Pricing Behavior," *Management Science*, 48(10), 1242, 1267

Choi, Pilsik and Coulter, Keith S. (2012), "It's Not all Relative: The Effects of Mental and Physical Positioning of Comparative Prices on Absolute versus Relative Discount Assessment," *Journal of Retailing*, 88(4), 512-527

Choi, S. Chan, Desarbo, Wayne S. and Harker, Patrick T. (1990) 'Product Positioning under Price Competition', *Marketing Science*, 36 (February)

Corrado, Charles J. (2011), "Event studies: A methodology review," *Accounting and Finance*, 51, 207-234

Geyskens, Inge, Gielens, Katrijn and Gijsbrechts, Els (2010), "Proliferating Private-Label Portfolios: How Introducing Economy and Premium Private Labels Influences Brand Choice," *Journal of Marketing Research*, 48(October), 791-807

Gielens, Katrijn, Van de Gucht, Linda M., Steenkamp, Jan-Benedict E.M. and Deimpe, Marnik G. (2008), "Dancing with a Giant: The Effect of Wal-Mart's Entry into the United Kingdom on the Performance of European Retailers," *Journal of Marketing Research*, 45(October), 519-534

Gimeno, J., and Chen, M. J. (1998), "The Dynamics of Competitive Positioning: A Pair-Wise Perspective, *Academy of Management Proceedings*, 1-8

Greve, H. R. (1996), "Patterns of Competition: The Diffusion of a Market Position in Radio Broadcasting, *Administrative Science Quarterly*, 41, 29-60

Hauser, John R. (1998), "Competitive Price and Positioning Strategies," *Marketing Science*, 7(Winter), 76-91

Hausman, Jerry A. (1981), "Exact Consumer's Surplus and Deadweight Loss," *The American Economic Review*, 71(4), 662-676

Hausman, Jerry A. and Leibtag, Ephraim (2007), "Consumer Benefits From Increased Competition In Shopping Outlets: Measuring The Effect Of Wal-Mart," *Journal of Applied Econometrics*, 22, 1157-1177

Iyer, Ganesh and Seetharaman, P. B. (2008), "Too Close to be Similar: Product and Price Competition in Retail Gasoline Markets," *Quantitative Marketing and Economics*, 6 (3), 205-234

Jain, Dipak C. and Rao, Ram C. (1990), "Effect of Price on the Demand for Durables: Modeling, Estimation, and Findings," *Journal of Business and Economic Statistics*, 8(2), 163-170

Kalyanaram, Gurumurthy and Urban, Glen L.

(1992), "Dynamic Effects of the Order of Entry on Market Share, Trial Penetration, and Repeat Purchases for Frequently Purchased Consumer Goods," *Marketing Science*, 11(3), 235-250

Kolari, James W. and Pynnonen, Seppo (2010), "Event Study Testing with Cross-Sectional Correlation of Abnormal Returns," *The review of Financial Studies*, 23, 3996-4025

Kyriakopoulos, Kyriakos (2004), "The Impact of Cooperative Structure and Firm Culture on Market Orientation and Performance," *Agribusiness*, 20(4), 379-396

Lam, Son K., Ahearne, Michael, Hu, Ye and Schillewaert, Niels (2010), "Resistance to Brand Switching When a Radically New Brand is Introduced: A Social Identity Theory Perspective," *Journal of Marketing*, 74(November), 128-146

Lamey, Lien, Deleersnyder, Barbara, Steenkamp, Han-Benedict E.M. and Dekimpe, Marnik G. (2012), "The Effect of Business-Cycle Fluctuations on Private-Label Share: What Has Marketing Conduct Got to Do with it?," *Journal of Marketing*, 76(January), 1-19

Liberman, Marvin B. and Asaba, Shigeru (2006), "Why Do Firms Imitate Each Other?" *Academy of Management Review*, 31(2), 366-385

Madkinlay, A. Craig (1997) "Event Studies in Economics and Finance," *Journal of Economic Literature*, 35, 13-39

Meza, Sergio and Sudhir K. (2010), "Do Private Labels Increase Retailer Bargaining Power?," *Quantatitive Marketing and Economics*, 8, 333-363

Pepe, Michael S., Abratt, Russell and Dion, Paul (2012), "Competitive advantage, Private-label brands and category profitability," *Journal of Marketing Management*, 28 (February), 154-172

Pinkse, Joris, Slade, Margaret. E. and Brett, Craig (2002), "Spatial Price Competition: A Semiparametric Approach," *Econometrica*, 70(3), 1111-53

Pfeffer, J., and G. R. Salancik (1978), The external Control of organizations: A Resource Dependence Perspective, New York, Harper & Row

Pofahl, Geoffrey M., Capps JR, Oral and Love, H. Alan (2006) "Retail Zone Pricing and Simulated Price Effects of Upstream Mergers," *International Journal of the Economics of Business*, 13(2), 195-215

Sayman, Serdar, Hoch, Stephen J. and Raju, Jagmohan S. (2002), "Positioning of Store Brands," *MarketingScience*,21(4),378-397

Shankar, Venkatesh, Carpenter, Gregory S. and Krishnamurthi, Lakshman (1998), "Late Mover Advantage: How Innovative Late Entrants Outsell Pioneers," *Journal of Marketing Research*, 35(February), 54-70

Shin, Sang-Cheol and Burke, Dock (2010), "A Comparison of Hausman's and Breslow-Smith's methods in estimating consumer welfare loss because of fuel taxes," *Inter-*

national *Journal of Consumer Studies*, 34, 80-86

Sinapuelas, Ian Clark S. and Robinson, William T. (2012), "Do me-too brands price lower than the feature pioneer?," *Journal of Product and Brand Management*, 21(5), 350-358.

Sivakumar, K. and Raj, S. P. (1997), "Quality Tier Competition: How Price Change Influences Brand Choice and Category Choice," *Journal of Marketing*, 61(July), 71-84.

Song, Moon H. and Walkling, Ralph A. (2000), "Abnormal returns to rivals of acquisition targets: A test f the acquisition probability hypothesis," *Journal of Financial Economics*, 55, 143-171.

Steenkamp, Jan-Benedict E.M., Heerde, Harald J. and Geyskens, Inge (2010), "What makes Consumers Willing to Pay a Price Premium for National Brands over Private Labels?," *Journal of Marketing Research*, 48(December), 1011-1024

Stone, K.E. (1995), "Impact of Wal-mart Stores on Iowa Communities:1983-1993," *Economic development Review*, 13(Spring). 60-69.

Thomadsen, Raphael (2005), "The Effect of Ownership Structure on Prices in Geographically Differentiated Industries," *The RAND Journal of Economics*, 36(4), 908-929

Vitorino, Maria ana (2012), "Empirical Entry Games with Complementarities: An Application to the Shopping Center Industry," *Journal of Marketing Research*, 49(April), 175-191

Wilkie, Dean C.H, Johnson, Lester W. and White, Lesley (2012), "The impact of low=price Brands on the order of entry advantage," *Journal of Marketing Management*, 28 (July), 957-973