

Local Identity and Persistent Leadership in Market Share Dynamics: Evidence from Deregulation in the Korean Soju Industry*

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November 6, 2012

Abstract

This paper empirically documents significant effects of past experiences on current purchases and investigates sources of persistence in brand preferences. We use a rare natural experiment in the Korean soju industry, in which the government abolished a regulation that designated only one firm for each regional market and further obliged consumers in each market to purchase local brands. We find that consumers tend to purchase local brands even after the regulation was removed. To explain the persistent leadership of local firms in their respective markets, we propose an identity-based story, which implies that (i) the designated local company is expected to have the highest market share in its local market, (ii) migrants to other regions tend to consume products produced by the designated local company in their region of origin, and (iii) any exogenous event that triggers higher costs of local identity should lead to a higher market share by the designated local company in its local market. In particular, we consider regionalism in Korean politics, and use presidential election results as events that might trigger higher identity costs. We find empirical evidence consistent with these three theoretical predictions, which is robust to several alternative specifications. We further find that various other potential mechanisms are not fully consistent with our data, suggesting that local identity, once established, can be an important source to explain the geographic variations in market shares.

*We thank Dan Bernhardt, Marco Castaneda, George Deltas, Jeremy Fox, Alessandro Lizzeri, and seminar participants at ASSA, IIOC, and University of Illinois for comments and suggestions. Excellent research assistance in data collection and processing was provided by Jin Hwa Chung. Seonghoon Jeon acknowledges support from the National Research Foundation of Korea Grant funded by the Korean Government (NRF-2010-330-B00091).

1 Introduction

In this paper, we empirically document significant effects of past experiences on current purchases and investigate sources of the persistence in brand preferences. A large body of empirical research in both economics and marketing has documented that consumers tend to choose a product that they have purchased in the past.¹ Moreover, several strands of theoretical literature have proposed various mechanisms through which past experiences may determine current willingness to pay for brands.² However, the main difficulty of empirical testing in these studies is that past purchases are not normally given exogenously, and that unobserved heterogeneity affects consumers' choices in the past as well as in the current period.³ To address this endogeneity problem, we use a rare natural experiment in the Korean soju industry,⁴ in which the government designated only one firm in each regional market and obliged consumers in each market to purchase local brands. We find that local consumers tend to purchase local brands even after this mandatory local soju purchase policy was abolished. To explain the persistent leadership of local soju firms in their local markets, we further propose an identity-based story and provide empirical evidence supporting this theory.

Social scientists in various disciplines, such as anthropology, sociology and psychology, have studied social identity as a central concept and argued that differences in norms associated with social identities have considerable explanatory power in describing demographic differences in behaviors. Akerlof and Kranton (2000) brought the concept of identity into economic analysis. We adapt their model of identity to describe the geographic patterns in local market shares in the Korean soju industry after deregulation. Specifically, we posit that past purchases mandated by the regulation, particularly during the 1970s, led consumers to form local identities associated with local soju brands. This association with local brands then generates a behavioral prescription that local consumers should drink local soju brands, and anyone who violates this prescription incurs identity costs.

To the extent that local identity associated with local brand was established before the deregulation, the local identity story thus implies three theoretical predictions: (i) with everything else being equal, the designated local company is expected to have higher market share in its local

¹See, e.g., Dubé, Hitsch, and Rossi (2010), Erdem (1996), Keane (1997), and references therein.

²These mechanisms include habit formation (e.g., Becker and Murphy 1988), network effects and switching costs (e.g., Farrell and Klemperer 2007), past exposure to advertising (e.g., Schmalensee 1983), and herd behavior and social learning (e.g. Banerjee 1992, Ellison and Fudenberg 1995).

³See, e.g., Heckman (1981), Arellano and Honoré (2001), Hong and Rezende (2011), and references therein.

⁴Soju is the most popular traditional alcoholic beverage in Korea. Section 2 provides more background information.

market than in other markets or other firms in its local market, (ii) at least in the short-run, migrants to other regions will have a tendency to consume soju produced by the designated local soju company in their region of origin, and (iii) any exogenous event that triggers higher identity costs should lead to a higher market share by the designated local company in its local market.

We consider these three hypotheses because not all of them are implied by several alternative theories for brand loyalty. In particular, hypothesis (iii) is inconsistent with other theories such as switching costs, learning costs, or habit formation. Given that few empirical studies have provided evidence related to (iii),⁵ we further focus on (iii). Specifically, we consider regionalism in Korean politics and use the results of presidential elections as events that might trigger higher identity costs. In Korea, regionalism has been especially acute between the southeast and the southwest, which is attested by the fact that all Korean presidents from the early 1960s to 1997 came from the southeast region, while the president elected in 1997 came from the southwest region. Especially, the presidential election outcome in 1997 might have led most voters in the southeast region to become less tolerant of voters in other regions who mostly voted for the presidential candidate from the southwest region, which thus increased identity costs of violating a behavior prescription in the southeast region. This event was followed by a considerable increase in local firms' market shares in the southeast region, which is consistent with hypothesis (iii).

To formally test the three hypotheses, we use data from various sources, including the Korean Alcohol and Liquor Industry Association (KALIA), and perform our empirical analysis. We find evidence consistent with all three hypotheses. Moreover, we consider various measures to reflect changes in identity costs due to regionalism in Korean politics, and our results from various regressions are all consistent with hypothesis (iii). In addition, our estimates suggest that local identity has an economically significant and persistent effect on local market shares. These findings are robust to various alternative specifications, while we find that other potential stories provide only a limited explanation for the geographic patterns in local market shares.

Our paper relates to the “persistence of leadership” debate in the long-run market structure and the “brand loyalty” literature. The question of how long a market leader can sustain its leadership position has been one of the central questions in industrial organization — the “Schumpeterian” view highlights the transience of leadership, whereas the “Chandlerian” view posits that leadership

⁵An exception is Fryer and Levitt (2004) who show that the Black Power movement provided a shock to the identity prescriptions, which led most Blacks to adopt increasingly distinctive names from Whites.

tends to persist. To address this question, Sutton (2007) constructs a “neutral benchmark” model of market share dynamics with a Markovian process against which the two rival hypotheses can be tested. By using data from Japanese manufacturing industries, Sutton finds evidence for tendency towards market leadership persistence. However, he cautions against advocating any single mechanism to play a dominant and systematic role in driving market share dynamics across industries and calls for an industry-specific approach for a richer account. In this respect, our approach complements the analysis of Sutton (2007).

Consistent with Sutton (2007), Bronnenberg, et al. (2009) also find evidence for the persistent brand shares for consumer packaged goods. In particular, they find a significant “early entry” effect on a brand’s current market share and perceived quality across different U.S. cities. Given that early entry is closely related to the regulation that created the designated local firms in the Korean soju industry, their finding is consistent with our hypothesis (i). In addition, Bronnenberg, et al. (2010) use individual consumption data for migrants and lifetime residents, and find evidence consistent with our hypothesis (ii). Therefore, our empirical evidence on (i) and (ii) confirms these findings in the previous studies. Moreover, our paper also contributes to this literature by proposing a new mechanism for brand loyalty and by providing new evidence consistent with hypothesis (iii), which has not been explored in the literature.

Lastly, our paper is also related to experimental studies such as Benjamin, et al. (2010) that use “priming” to temporarily make a certain social category more salient, and examine whether a person’s behavior leans toward the norms when primed with the given social category. Priming thus plays a similar role as an exogenous event that triggers higher identity costs, which is related to our evidence on (iii). In contrast to these experimental studies, however, we use a “natural experiment” from the presidential election and examine whether this event would lead local consumers’ behavior to tilt more toward the prescription, hence increasing local firms’ share in their local markets.

The remainder of this paper is organized as follows. In Section 2, we describe the Korean soju industry as well as regulations and deregulation in this industry. Section 3 describes our data and presents descriptive statistics that show the geographic variations in local market shares and changes in other related variables. In Section 4, we propose our identity-based theory. Section 5 presents our empirical framework and reports our empirical evidence. This section also examines several alternative explanations. Section 6 concludes the paper.

2 Background

Soju is the most popular traditional alcoholic beverage in Korea. According to the Korea National Tax Service (2009), soju accounts for about a third of total alcohol beverages (in volume) consumed by Koreans in 2008. Most products contain 20-25% alcohol by volume (ABV), and a typical 0.3 liter bottle of soju costs about \$1 to \$3, which may partly explain its popularity. Two types of soju are available in Korea. One is diluted soju, and the other is distilled soju.⁶ In this paper, soju refers to diluted soju, because it is the most popular type of soju, and unique regulations studied in this paper were imposed only in the diluted soju industry. The industry is currently structured as follows. There are 10 firms and 10 regional markets — eight provinces, the Busan metropolitan city, and the Seoul region which includes both the Seoul special city and nearby Gyeonggi province. Each firm is dominant in its regional market. However, this industry structure did not arise naturally, but was instead established by the regulations, particularly during the 1970s.⁷

Most notably, the Korean government forcibly consolidated various local soju producers and designated only one firm as the local soju producer per each regional market in the early 1970s. In addition, the government restricted the licenses to produce soju and required soju producers to notify the National Tax Service before they increased prices. More importantly, the government introduced two policies to further regulate the industry during the 1970s. The first was the mandatory local soju purchase policy,⁸ which required the distributors in each regional market to purchase more than 50% of soju from the designated local firm in each market. The other was the input allocation policy, which allocated soju alcohol base to soju companies based on their national market shares in the previous year.⁹ These policies intended to protect local firms and discourage excessive competition, but they also obliged consumers in each regional market to mostly purchase

⁶Diluted soju is made through diluting the alcohol base — highly distilled ethanol from starches such as sweet potato or tapioca — with water, flavoring, and sweetener. Soju was traditionally made from rice through a distillation process, but due to rice shortages during the 1960s, the Korea government prohibited the use of rice for making soju, which led distilleries to use other starches to make the alcohol base and dilute it with water and additives. Firms resumed producing distilled soju from the early 1990s on, but even in 2008, total volumes of distilled soju were less than 0.05% of total volumes of diluted soju (refer to Korea National Tax Service 2010).

⁷Our description of the regulation in this industry is mainly based on the official chronicle published by the Korea Alcohol and Liquor Industry Association (KALIA) in 1999. The KALIA was established in 1980, and its members include various producers of alcoholic beverages in Korea. Because the Korean government has primarily used alcohol tax laws to regulate the soju industry, we also refer to previous alcohol tax laws in Korea.

⁸This policy was Executive Order 534, issued by the Korea National Tax Service on June 24, 1976.

⁹The government set up the Korean Ethanol Supplies Company (KESC) in 1972 and required the producers of soju alcohol base to sell all their alcohol base to the KESC. Though most soju companies owned alcohol base production facilities, they were required to sell the alcohol base to the KESC and repurchase it from the KESC, which enabled the government to allocate the alcohol base.

local brands. As a result, the local designated firms became dominant in their regional markets.

However, a trade liberalization trend around the late 1980s led the Korean government to begin deregulating several industries, including the soju industry. Deregulation in the soju industry during the early 1990s included the following changes. First, the government lifted restrictions on new licenses for alcohol distribution in January 1991 and similarly for soju production in March 1993. Second, various restrictions on the production of soju were removed or weakened.¹⁰ Third, the government gradually changed the mandatory local soju purchase policy in the early 1990s and completely abolished the policy in January 1992.¹¹ Fourth, the input allocation policy was also repealed in January 1993.

These deregulatory changes lowered barriers to entry and intensified the degree of competition. Before the deregulation in the early 1990s, each firm's market share changed little, and most firms produced only one brand or two brands. After the deregulation, however, the soju industry experienced considerable changes, particularly during the mid 1990s. First, Jinro, the dominant firm in the Seoul region, increased the extent of its entry into other local markets by spending more on advertising and building new production facilities in two other regional markets. Second, the Doosan Group, a Korean conglomerate, acquired a local soju company in 1994 and started to enter other regional markets, especially focusing on the Seoul region. Third, in response to the deregulatory changes, local soju companies introduced various new products and increased their advertising expenses, given that prices were still regulated.

Despite the deregulation, most local companies maintained fairly high market shares in their regional markets, ranging over 50% in some markets. Nonetheless, their local market shares continued to decline between 1993 and 1995, as Jinro's market shares in most regional markets started to increase during this period. As a result, local soju companies lobbied for reintroducing the protection policies, and the National Assembly of South Korea finally reintroduced the manda-

¹⁰The Korean government had used alcohol tax laws to restrict the production of soju as well. For example, alcohol tax laws include the list of additives that could be used to dilute soju. This list was expanded during the 1990s. In addition, the alcohol tax law in 1975 restricted the percentage of alcohol in soju to be only 20, 25 and 30% ABV, but starting from 1989, the percentage was allowed to vary between 20% and 30% ABV. It was further relaxed in the alcohol tax law in 1991 which required it to be below 35% ABV. The restriction on the ABV of soju was finally removed in the alcohol tax law in 1995.

¹¹The mandatory local soju purchase policy was first alleviated in 1982, when the government ordered that this policy should not be applied to the three largest firms whose national market shares exceeded 10%. In January 1990, the government required local distributors to purchase more than 40% of soju from the local designated firms, and excluded two more companies whose national market shares were above 7%. In January 1991, it further lowered the required purchase percentage to be 30%, and excluded two more firms whose national market shares were above 5%.

tory local soju purchase policy into the alcohol tax law in October 1995. Due to this policy, local companies' market shares reached above 50% during 1996. However, soju distributors challenged the policy, and the case was eventually decided by the Supreme Court of Korea in late 1996. The Supreme Court ruled that this policy was unconstitutional and abolished it in December 1996.¹² Not surprisingly, the removal of the policy led local firms' market shares to decline again in some markets. Nevertheless, all the local firms still retained significant shares in their regional markets. In particular, market shares of local firms in the southeast markets even increased substantially. In Section 3.2, we provide a more detailed description of changes in market shares as well as firms' responses after the deregulation.

3 Data and Descriptive Statistics

3.1 Data

Our data are obtained from various sources. The main data on market shares are obtained from the Korean Alcohol and Liquor Industry Association (KALIA) which consists of all the soju companies as well as other alcohol manufacturing companies in Korea. In 1994, the KALIA set up its electronic database, the KALIA-Net, and has collected monthly information on national sales and volumes of its members at the firm level and at the product level.¹³ The KALIA-Net also includes the firm-level information on each soju company's volumes sold in each regional market, from which we compute the firm-level local market shares. To obtain the data for the period before 1994, we use trade magazines published by the KALIA which date back to 1985. For the period between 1985 and 1993, however, only yearly information is available for the firm-level regional volumes.

The information on prices and products is obtained from the same sources — the KALIA-Net and trade magazines. For the period between 1994 and 2008, a price variable is created by dividing the sales by the volume sold. For the earlier period, we use list prices for each product. Since soju companies produced several brands, particularly after the deregulation, we additionally create prices for each company by averaging prices of all products available in each period.¹⁴ Because our data include all the soju brands with different levels of ABV, we can easily obtain the information on the

¹²Refer to the Supreme Court decision on Article 38 (7) of the alcohol tax (effective on October 1, 1995), which was decided on December 26, 1996.

¹³The KALIA-Net is available only to its members, but we were allowed access to its database.

¹⁴For 1994-2008, we use both unweighted average prices and volume-weighted average prices. For the period before 1994, however, the product-level information on either sales or volumes is not available. Hence, we use only unweighted average prices for firm-level prices.

number of new products and the number of products by brands or by brands and ABV.¹⁵ In addition to brand names and ABV, we also collect more detailed information on product characteristics by searching trade magazines and newspaper archives.

Advertising data are taken from the Korean Advanced Digital Data (KADD), currently owned by Nielsen Media Research in Korea. The KADD has collected advertising expenditure information by monitoring all major Korean media including television, radio, newspapers and magazines. The KADD database contains monthly information on advertising expenditures for nine soju companies from 1990 to 2008.¹⁶ The data on local market characteristics such as population, unemployment rates, income, and price index, as well as the information on migration between different markets are obtained from Statistics Korea, which is the official national statistics service of the Korea government. Lastly, the unit of our main analysis is the yearly local market share of each firm in each local market.¹⁷

3.2 Descriptive Statistics

Because the names of different regions and companies are originally in Korean, we simplify these names by using markets 1-11 and firms 1-10.¹⁸ Market 1 is Jeju island, which is the farthest from Seoul. Markets 2-4 are located in the southeast region, and markets 5-6 are in the southwest region. Markets 7-8 are located in the central region, and market 9 is the east region. Finally, market 11 is Seoul, and market 10 is the nearby province. Hence, the market with a lower number tends to be located farther from Seoul. As for firms 1-9, firm j denotes the designated local company in market j , whereas firm 10 is Jinro, which is the designated local company in markets 10-11, and is also the dominant firm in the nation, since the Seoul region in markets 10-11 has around 40% of the Korean population.

We begin by describing changes in market shares, where market shares are computed by using total volumes (in liter) that each firm sold in each market for a given year. Table 1 presents

¹⁵Especially after the deregulation, some companies introduced different levels of ABV for the same brand of soju.

¹⁶The KADD excludes the smallest soju company, Halasan, located in Jeju island. The KADD released only nationally aggregated information for each firm. Except for the national brand company, most local soju companies focused on their regional markets, thus mostly targeting consumers in their local markets. Note also that some advertisements might be posted on local stores or restaurants which were not monitored by the KADD.

¹⁷Though we also collected the monthly (or quarterly) information for key variables, we mainly use the yearly information, because we obtain similar results from either information.

¹⁸More specifically, markets 1-11 respectively denote Jeju province, Busan, Gyeongsang-nam province, Gyeongsang-buk province, Jeolla-nam province, Jeolla-buk province, Chungcheong-nam province, Chungcheong-buk province, Gangwon province, Gyeonggi province, and Seoul. Firms 1-10 respectively denote Halasan, Daesun, Moohak, Kumbokju, Bohae, Bobae, Sunyang, Chungbuk, Doosan (acquired by Lotte BG in 2008), and Jinro.

summary statistics of market shares and other related variables in the national market — the sum of all local markets — and in the local markets over time. Panel A shows high concentrations in the national market both during the regulation period and during the deregulation period.¹⁹ The market shares of the dominant firm, denoted by C1, were about 40-50% with small variations over time. Similarly, C2 did not vary much over time and was approximately 60%. The number of firms remained the same throughout all periods, and most local firms accounted for small shares in the national market, as shown in the share of non-top 2 firms. In both periods, the correlation coefficients between the current national market shares and the previous national market shares are over 0.99, suggesting the significant persistence of market shares. Panel B shows that similar patterns are observed in the local markets, but the concentrations in the local markets are even higher than in the national market. The mean of C1 is over 70%, and the mean of C2 is over 90%. Though the number of firms in each local market has slightly increased after the deregulation, the local markets seem to have become slightly more concentrated after the deregulation, and the significant persistence is also observed in local market shares.

Figure 1 displays yearly changes in market shares for each local market. The vertical lines in Figure 1 and the subsequent figure indicate the repeal of the mandatory local soju purchase policy in 1992 and the input allocation policy in 1993, as well as the reintroduction of the mandatory local soju purchase policy in late 1995 and its removal in late 1996. The figure demonstrates that most local firms are dominant in their local markets, in which the designated local firm competes mostly with firm 10 in its local market.²⁰ Though other local firms have sold their products outside their regional markets, C2 has been over 90% in most local markets. The figure also shows that market shares did not change much before the deregulation in the early 1990s, but after the deregulation, firm 10 increased its shares in most markets until 1995.²¹

The reintroduction of the mandatory local soju purchase policy, however, forced local firms' market shares to become over 50%. Surprisingly, removing this policy in late 1996 did not result in the same changes as in the first removal of this policy in 1992. For several local markets, local firms' market shares increased after 1997. In particular, market shares of local firms in markets

¹⁹In this paper, the regulation period refers to the period before 1992 as well as the year of 1996, when the mandatory local soju purchase policy was effective. The deregulation period refers to the period after 1991, excluding 1996.

²⁰The exception is markets 10-11, where firm 10 was the designated local firm and competed with other firms. In particular, since firm 9 was acquired by a national conglomerate in 1994, the competition in markets 10-11 has been mostly between firm 10 and firm 9.

²¹The exceptions include market 1, which is located in an island and is also the smallest, and market 9, in which firm 9 was acquired by a national conglomerate.

2-4 rapidly increased around 1997 and have remained over 75%. There might be several factors to explain these puzzling changes in local market shares, but we focus on an explanation related to regionalism in Korean politics and the presidential election in 1997, which we discuss in Section 4.2.

Overall, most local firms have maintained significant market shares in their local markets, despite deregulation. This strong loyalty for local brands is also shown in Table 2. This table reports the results from the regressions of local market shares on `designated` and `designated*deregulation`, where `designated` is the indicator variable for the designated local company, and `deregulation` is the indicator dummy for the deregulation period. We use the sample from the period between 1986 and 2008. If brand loyalty had not been strong, deregulation should have lowered local market shares for designated local firms, suggesting a negative coefficient for `designated*deregulation`. However, the table shows that the coefficient on `designated*deregulation` is small and statistically insignificant across different specifications. We also interact `designated` with year dummies in columns 2, 4, 6, and 8, and most coefficient estimates for these interaction terms are insignificant, except for 1994 and 1995. These estimates are consistent with changes in local market shares described above, and show the presence of strong loyalty for local brands.

The observed local brand loyalty is likely to have resulted from the consolidation of local firms in the early 1970s and the mandatory local soju purchase policy in the mid 1970s. Note that this policy obliged consumers to mostly consume local brands regardless of their preferences. Because consumers are unlikely to have moved to a particular region in order to purchase local soju in that region, it is plausible that many consumers were exogenously forced to purchase local soju during the regulation period. Accordingly, the results in Table 2 suggest that the (exogenously enforced) past purchase of local brands has led consumers to continue to purchase local brands despite deregulation. In the next section, we examine potential mechanisms underlying strong loyalty for local brands.

In this paper, we mainly focus on the strong brand loyalty to explain the geographic variations in local market shares in the soju industry, but other factors might be important as well. One possible factor is potential heterogeneity across different markets. Table 3 reports that the total population in markets 10 and 11, where firm 10 was the designated soju company during the regulation period, is considerably larger than that in any other market, which might explain why firm 10 became the most dominant firm in the nation. In addition, different local markets seem to have experienced different degrees of local economic change in terms of growth rates and unemployment rates. Hence,

local economy might explain the geographic variations in market shares as well. However, it is also likely that the observed changes in market shares after the deregulation might be due to firms' responses to the deregulatory changes. For this reason, we further consider changes in prices and other strategic variables below.

Figure 2 illustrates the biannual changes in nominal prices of individual products (by brand) for each company. In this figure, each point represents a price of each product available at each period, and the fitted line is the locally weighted regression line. The figure indicates that prices have gradually increased over time, but the fitted lines suggest that the trends in prices are fairly similar across different firms over time. Note that the price regulation in this industry restricted firms from increasing prices, though lowering prices was still possible in principle. Nevertheless, few firms engaged in intense price competition despite the potential threat of entry due to the deregulatory changes.²² In contrast to price changes, the number of products, which is represented in the figure by the number of points in each period, has changed significantly after the deregulation in the early 1990s. Before the deregulation, firms produced only one product or two products. After the deregulation, the number of products has increased significantly, though the extent of changes seem to vary across different firms over time.

Table 4 summarizes changes in these and other related variables for local firms and national firms. Several observations emerge from this table. First, the number of products, either by brand, or by both brand and ABV, started to increase around 1992. It reached its peak in 1996 and then gradually decreased, though it slightly increased again in 2006. Second, local firms introduced more new products particularly in 1996 when the mandatory local soju purchase policy was reintroduced. Accordingly, changes in local market shares after the removal of this policy in late 1996 might be partly attributable to local firms' product differentiation. Third, as firms introduced new products, product characteristics also changed. For example, the average ABV was slightly higher than 26% before 1992, but it started to decline after 1992. In 2008, the average ABV was about 20%. The changes in the average ABV are slightly different across the local firms and the national firms, but the overall trends are similar. Fourth, advertising expenditures increased substantially after 1992.²³ These observations suggest that the geographic patterns in market shares might be also

²²This observation contrasts with Goolsbee and Syverson (2008) who showed that incumbents cut airline fares significantly when threatened by Southwest's entry.

²³We do not have information before 1990. Given that the government regulated both market shares and input quantity, however, it is unlikely that the level of advertising expenditure before 1990 was much higher than the level in 1990 and 1991.

explained by firms' responses to the deregulatory changes. Therefore, we will consider these other factors in our empirical analysis in Section 5.

4 Theoretical Framework

The previous section shows that the designated local firms have maintained significant market shares in their local markets even after the deregulation. In this section, we examine potential mechanisms underlying the persistence of local market shares in the Korean soju industry. Though the economics literature has proposed various channels explaining brand loyalty,²⁴ some mechanisms are not plausible in the soju industry. For example, endogenous advertising sunk costs (Sutton 1991) do not seem to be applicable to the soju market because past purchase during the regulation period are unlikely to reflect heavy advertising in the past, given that the industry was heavily regulated, and the level of advertising was low during the regulation period. In addition, soju is a relatively cheap and homogeneous product, and thus switching costs (Klemperer 1987) or learning costs (Schmalensee 1982) are unlikely to be important in this industry.

To provide a more plausible story to explain the persistence of market dominance by the designated local companies after the deregulation, we thus propose our main explanation based on local identity. In particular, we focus on three key predictions of local identity, since they are not fully implied by alternative stories such as habit formation. In what follows, we provide a more detailed discussion of this mechanism.

4.1 Brand Capital with Local Identity

Akerlof and Kranton (2000) develop a model of identity to explain how a person's sense of self affects economic outcomes. In particular, they propose a utility function that incorporates the psychology and sociology of identity, where identity is associated with different social categories to which people belong, and particular behaviors are associated with these categories. They also discuss how social categories and their associated prescriptions or norms can sometimes be created

²⁴Representative theories include habit formation (Becker and Murphy 1988), strategic moves by the incumbents, including preemptive product positioning and investments (Eaton and Lipsey 1979), endogenous sunk costs, such as advertising costs (Sutton 1991), and switching costs (Klemperer 1987). Asymmetric information about product quality can also play a role in creating the incumbent advantage and lead to persistent consumption patterns with brand loyalty (Schmalensee 1982). Herd behavior and social interactions are yet another mechanism that can generate persistent consumption behavior. For instance, past observations of the behavior of others may lead to a similar behavior (Banerjee 1992, Bikhchandani, et al. 1992, Ellison and Fudenberg 1995).

and manipulated with the use of advertising, new titles, and symbolic acts. We adapt their model of identity to describe the consumption pattern in local soju markets after the deregulation.

Specifically, consider a local market m in which all consumers consider themselves and others as local. There are two possible consumption behaviors in local market m : drink local brand L^m , or drink other local brand L^k , where $k \neq m$. As in Akerlof and Kranton (2000), we add a simple behavioral prescription that a local person in market m should drink local brand L^m . We posit that local identity associated with local brand was established during the regulation period. The impetus of this association process with local brand was partly provided by the government-initiated consolidation of local producers that designated only one firm as the local producer in each regional market. The process was further aided by the mandatory local soju purchase policy that guaranteed at least 50% market share of the designated local firms in their respective local markets. Moreover, this process was likely facilitated by typical consumption of soju in which it was consumed together in social gatherings. The same could be said for any alcoholic beverages, say, beer and wine. However, soju consumption goes one step further in that regard. Take the example of beer consumption in a typical restaurant in Korea. It is common that each person orders an individual bottle or can. In contrast, a typical consumption pattern for soju is that a group of consumers order one brand of soju and share the same bottle due to its high alcohol content. For wines, people share the same bottles, but at the same time they may prefer to taste different varieties in the same seating, which rarely happens in soju consumption due to its homogeneity.²⁵

With this association with local brands, anyone who drinks a brand other than L^m is not true local- m , and thus loses local- m identity, or incurs identity costs. This mechanism based on identity costs can be effective, because the consumption of soju is a highly visible social activity, and soju is served directly from bottles with the brand name visible. Let C_m^{-m} denote the identity cost of consuming a brand other than L^m in local market m . For consumer i in market m , the utility of consuming brand j is then given by:

$$U_{ijm} = u_{ij} - C_m^{-m} \mathbb{I}\{j \neq L^m\},$$

where u_{ij} represents consumer i 's intrinsic preference towards brand j , and $\mathbb{I}\{\cdot\}$ is an indicator

²⁵In addition, only a fraction of consumers in Korea consume wines. According to the Korea National Tax Service (2009), wines account for about 0.7% of total alcohol beverages consumed by Koreans in 2008. Beer accounts for about two thirds of total alcohol consumption in Korea. However, the government did not impose any restrictive consumption policies for beer, and there have been only two or three national brand firms in the Korean beer industry. As a result, most consumers are unlikely to have associated their local identity with any wine brand or beer brand.

function. With this utility specification, consumer i in market m will choose brand j , if

$$U_{ijm} > \max_{k \neq j} [U_{ikm}, 0].$$

The model is simple, and the predictions below follow immediately from the model.

First, the model implies that the designated local brand L^m in local market m has an advantage over other brands owing to the identity costs associated with consuming other brands, which results in a higher market share than all other brands in local market m . Conversely, the market share of local brand L^m should be lower in other market k ($k \neq m$) than in market m . Second, if an exogenous event increases C_m^{-m} , more consumers in market m would choose L^m , in which case the designated local firm m 's market share should also increase in local market m .

In addition to these two predictions, we also posit that if consumers with local- m identity migrate from market m to another market, their utility of consuming soju products would not change in the short-term, implying that most migrants would continue to consume the product associated with their original local identity, i.e., brand L^m , at least in the short-term. Of course, a counterargument can be made in that the migration itself is a choice of identity, and if that is the case, the migrants would consume the local brand associated with their destination region. However, identity “choice” can often be very limited, as argued by Akerlof and Kranton (2000). In the case of migrants, typically the distinguishing feature would be local dialects, which can make it difficult for the migrants to pass as a “true” member of the destination region.²⁶

To summarize, to the extent that local identity associated with local brand was established before the deregulation, the local identity story implies the following three hypotheses:

- (i) *With everything else being equal, the designated local firm is expected to have higher market share in its local market than in other markets or other firms in its local market.*
- (ii) *At least in the short-run, migrants to other regions will have a tendency to consume the designated local soju brand from their region of origin unless they choose to change their identity.*
- (iii) *Any exogenous event that triggers higher identity costs should lead to a higher market share by the designated local firm in its local market.*

²⁶The change in identity may also entail “ambivalence, anxiety, and even guilt” (Akerlof and Kranton 2000, p. 726), which makes it difficult for migrants to change their local identity at least in the short-term.

We focus on these three predictions of the local identity theory, because several alternative stories for brand loyalty do not imply all these predictions. For example, the theory of habit formation as in Bronnenberg, et al. (2010) might be consistent with hypotheses (i) and (ii), but it is not consistent with (iii). Similarly, hypothesis (iii) is not implied by other theories such as switching costs, learning costs, or search costs. Herd behavior and social interactions might be consistent with hypotheses (i) and (iii), but if they are the main drivers of consumption patterns, migrants to another region are likely to follow the majority of local consumers in their destination region. Hence, herd behavior and social interactions are unlikely to imply hypothesis (ii).

Note that the previous empirical literature has already provided evidence consistent with hypotheses (i) and (ii). For example, Bronnenberg, et al. (2009) find a significant “early entry” effect on a brand’s current market share across different U.S. cities, where early entry is closely related to the regulation that created the designated local firms in the Korean soju industry. In addition, Bronnenberg, et al. (2010) find that although 60% of the gap between recent migrants and lifetime residents closes immediately after a move, the remaining 40% gap in purchases of consumers packaged goods attenuates slowly, suggesting that migrants tend to keep old preferences for a long time. Accordingly, these findings will be further confirmed by our empirical evidence on (i) and (ii). However, they are also consistent with some of alternative theories as above.

In contrast, hypothesis (iii) is inconsistent with several alternative theories on brand loyalty, and few empirical studies have provided evidence related to hypothesis (iii). As a result, our evidence particularly on (iii) will suggest the importance of local identity in explaining local market shares. To provide evidence consistent with (iii), we consider presidential elections in Korea as exogenous events that triggers higher identity costs, and the next section provides more detailed discussion.

4.2 Regionalism in Elections and Local Identity

As discussed in Akerlof and Kranton (2000) and experimentally documented by Benjamin, et al. (2010), social categories and their prescribed behaviors can be created and manipulated as well. This implies that if an event changes a population’s preference through changes in identity costs in our model, it will also have implications on market shares for local brands vis-à-vis other brands. Akerlof and Kranton (2000), in particular, point out that politics can often be a battle over identity, and this is indeed the case in contemporary Korean politics.

In this regard, we consider the presidential elections in Korea and regionalism in Korean pol-

itics.²⁷ As is common with burgeoning democracies, Korean presidents have enjoyed considerable power. The ability to exercise power without much constraint by other branches of the government meant that presidential election outcomes have important implications for distributive policies and resource allocations across regions. As a result, political support for presidential candidates has often been sharply divided along regional border lines, with each region supporting its own “favorite son”. Hence, presidential elections have been emotionally charged and have had enormous impacts on regional sentiment.

This regionalism has been particularly acute between the two rival regions in the south, which is attested by the fact that all Korean presidents from the early 1960s to 1997 came from the southeast region, whereas the president elected in December 1997 was a native of the southwest region. For most of the major presidential candidates in Korea, their main support or the support for their parties has come from either the southeast region or the southwest region, while the support from other regions has been mixed, which is further illustrated in Table 5. Panel A of the table shows the outcome of presidential elections in Korea after the deregulation. The majority of voters in the southeast region and the southwest region have continuously voted for candidates from the same region, while voters in other regions alternated their support and did not consistently vote for a candidate from a particular region. Panel B of the table reports similar patterns in legislative elections.²⁸

In the table, regime change occurred twice in presidential elections — one in 1998 and the other in 2008. However, the regime change after the 1997 presidential election was especially important, because all the previous presidents since the early 1960s were natives of the southeast region. Therefore, many voters in the southeast region around 1998 might have been upset with those in other regions who mostly voted for a candidate from the southwest region, which suggests that this event is likely to have increased identity costs of violating a behavior prescription in the southeast region. For this reason, the presidential election in December 1997 plausibly explains a considerable increase in local market shares of the designated local firms in markets 2-4 around 1997, which is documented in Section 3.2. Conversely, voters in the winning region might become more tolerant,

²⁷For more discussion on regionalism in Korean politics and presidential elections, see, e.g., Horiuchi and Lee (2008), Kim (2003), Park (2003), and references therein.

²⁸Though Korean presidents have enjoyed considerable power, the majority party in the Korean National Assembly has also exercised significant influence in Korean politics. The majority party usually coincides with the party of the sitting president, with some exceptions. Nevertheless, we also consider legislative elections, because their outcomes also provide similar events as those of presidential elections.

and thus, identity costs of violating a prescription in that region might be lowered. In the next section, we present our empirical specifications to test these hypotheses.

5 Empirical Evidence

5.1 Empirical Specifications

To test the three predictions of the local identity theory in the previous section, we consider three kinds of variables in our regressions. The first variable is `designatedim`, which is an indicator variable for whether firm i is the designated local company in market m . To the extent that local identity associated with local brand was established during the regulation period, the designated local firm is expected to have higher market shares in its local market than in other markets or other firms in its local market, suggesting a positive relationship between `designated` and local market shares after the deregulation. Of course, a positive relationship between these variables might be also implied by other mechanisms not related to brand loyalty. We thus examine other potential mechanisms in Section 5.3.

As for other mechanisms related to brand loyalty, several theories such as switching costs or endogenous sunk costs are unlikely to explain changes in local market shares in the Korean soju industry. Nevertheless, we acknowledge that `designated` alone would not provide sufficient evidence for whether the local identity effect is significant. In particular, note that `designatedim` is similar to the “Early Entry_{im}” variable used by Bronnenberg, et al. (2009), which is an indicator for whether brand i was the early entrant in market m . If each local designated company was also the first entrant in each local market, what we call the local identity effect might also reflect the early entry effect. Given our information, we cannot distinguish the early entry effect from the local identity effects. However, the early entry effect does not imply hypotheses (ii) and (iii). Accordingly, we use two additional variables below to test these hypotheses.

The second variable is `migration.ratioimt`, which is defined to be the fraction of people in market m and year t who moved from the market where firm i was the designated local soju company before the deregulation. If migrants’ utility of consuming soju products does not change in the short-run, hypothesis (ii) implies that higher `migration.ratioimt` would lead to higher market share for firm i in market m and year t . However, note that our migration variable contains only yearly aggregate changes in migration between different regions, and does not include information on cumulative changes. This limitation in our data could entail two potential concerns.

First, it might be possible that a large fraction of people moved from market A to market B before the deregulation, but then the migration from market A to market B slowed down after the deregulation. In this case, the designated local firm from market A might still have relatively high market share in market B due to migrants from market A before the deregulation, but `migration.ratio` for this firm in market B would be very small, suggesting a potential bias in the coefficient estimate for `migration.ratio` in our regressions of local market shares. However, this concern is unlikely to be serious in our case, because we find that `migration.ratioimt` is fairly constant over time for most firms in most markets.²⁹ Second, `migration.ratioimt` might also capture migrants who used to live in market m and now moved back to market m after temporarily living in the market where firm i was the designated local company. We do not expect the fraction of these migrants to be large, but if this fraction were fairly large, higher `migration.ratioimt` would be less likely to lead to higher `shareimt`. As a result, a positive effect of `migration.ratioimt` on `shareimt` implies both a potentially strong local identity effect and a lower fraction of aforementioned migrants.

The third set of variables is related to elections in Korea and is intended to capture regionalism in Korean politics. We first determine a presidential candidate (or a party) who received the highest votes in market m at the most recent election, and define `local.majoritymt` to be the fraction of voters in market m who voted for the majority candidate (or the party) in market m at the most recent election. We also define `losemt` (or `winmt`) to be the indicator variable for whether the presidential candidate in the majority in market m lost (or won) at the most recent election. In the case of a legislative election, `losemt` means that the party in the majority in market m did not win the majority of seats in the Korean National Assembly.

As discussed in Section 4.2, if the local majority in market m voted for a certain presidential candidate, but the candidate did not win at the election, then the majority of voters in market m are likely to become less tolerant, which would increase the identity costs of violating a prescription in market m . This will be more likely for regions with higher `local.majoritymt`. Given that local identity has been associated with local soju brands, the defeat in the presidential election would lead local consumers to consume local brands more, or consume other brands less, thus increasing local market share for the designated local firm in market m . To test this hypothesis, we thus consider `designatedim*local.majoritymt*losemt`. The coefficient estimate on this variable should be

²⁹We compute the standard deviations of `migration.ratioimt` for each firm i in market m , and the mean of these standard deviations is 0.0001, whereas the mean of `migration.ratioimt` is 0.0044, suggesting that `migration.ratioimt` does not vary much over time for given firm i in market m .

positive under hypothesis (iii).

To further examine the hypothesis (iii), we consider the following additional variables as well. First, given that regionalism was particularly acute in the southeast region and the southwest region, we use $\text{south}_m * \text{designated}_{im} * \text{local.majority}_{mt} * \text{lose}_{mt}$, where south_m is an indicator variable for these regions, that is, markets 2-6. Second, as discussed in Section 4.2, the reverse story might be possible, in that voters in the winning region might become more tolerant of other regions, which would decrease the identity costs of consuming brands from other regions. This might be more likely in the region with higher $\text{local.majority}_{mt}$. Hence, we use $(1 - \text{designated}_{im}) * \text{local.majority}_{mt} * \text{win}_{mt}$ to capture the effect on local market shares of firms from other regions. Third, we also consider not only presidential elections but also legislative elections, and use the outcomes of both elections to define $\text{designated}_{im} * \text{local.majority}_{mt} * \text{lose}_{mt}$ and $(1 - \text{designated}_{im}) * \text{local.majority}_{mt} * \text{win}_{mt}$.

Though we focus on regionalism and elections to test the hypothesis (iii), other events could also change identity costs and thus local market shares. In particular, local economy might also affect consumers' decisions to buy local products. For example, if the local economy slowed down and the unemployment rate went up in a local market, local consumers might resort to "protectionism" and not purchase products from other regions. Note that "protectionism" might be related to local identity,³⁰ in that its prescription is essentially the same as local identity's prescription that local consumers should buy local products. Hence, a severe economic downturn could play a similar role as an exogenous event that triggers higher identity costs. In this regard, we use two additional variables: $\text{designated}_{im} * \text{unemployment.rate}_{mt}$ and $\text{designated}_{im} * \text{real.growth.rate}_{mt}$.

Given our variable definition as above, we estimate the following regressions:

$$\begin{aligned} \text{Share}_{imt} = & \beta_1 \text{designated}_{im} + \beta_2 \text{migration.ratio}_{imt} + \beta_3 \text{designated}_{im} * \text{local.majority}_{mt} * \text{lose}_{mt} \\ & + X_{it} \delta + Z_{mt} \gamma + \lambda_{imt} + \epsilon_{imt}, \end{aligned} \tag{1}$$

where share_{imt} is the market share of firm i in market m and year t , X_{it} is a vector of firm specific variables such as the number of products and total advertising expenditure, Z_{mt} is a vector of market specific variables such as population and unemployment rates, and ϵ_{imt} is an idiosyncratic error. The main parameters of interest are β_1 , β_2 , and β_3 , corresponding to the three hypotheses. In place

³⁰Protectionism by itself cannot explain the persistence of local market shares, because its effect would be weakened as the local economy improves. Moreover, it is not related to hypothesis (ii) implied by the local identity story. Note that we consider protectionism only as a mechanism by which a severe downturn such as the currency crisis in Korea around 1997 might trigger higher identity costs.

of $\text{designated}_{im} * \text{local.majority}_{mt} * \text{lose}_{mt}$, we also use several other variables related to hypothesis (iii), as described above. Lastly, we consider several specifications for fixed effects λ_{imt} as follows: (a) $\lambda_{imt} = \alpha_i + \theta_m + \mu_t$; (b) $\lambda_{imt} = \alpha_i + \theta_{mt}$; (c) $\lambda_{imt} = \theta_{mt} + \mu_{it}$; (d) $\lambda_{imt} = \alpha_{im} + \theta_{mt} + \mu_{it}$. Obviously, if we include firm-year fixed effects μ_{it} (or market-year fixed effects θ_{mt}), we cannot include X_{it} (or Z_{mt}) in (1). Similarly, if we include firm-market fixed effects α_{im} , then we cannot include designated_{im} in (1). Note also that in our data, $\text{migration.ratio}_{imt}$ is fairly constant over time for most firms in each market. However, this implies that migration.ratio can be predicted almost perfectly by firm-market dummies. As a result, when we include firm-market fixed effects, we drop migration.ratio to avoid a multicollinearity problem. In Table 6, we present summary statistics of our regressors.

5.2 Evidence of the Local Identity Effect

To test the three predictions of the local identity theory, we estimate the regressions in (1). In these regressions, we use only the sample during the deregulation period. We begin with our baseline specifications, in which we use the presidential election variable, $\text{designated} * \text{local.majority} * \text{lose}$. The results are reported in Table 7. For all specifications in the table, the coefficient estimates on designated , migration.ratio , and $\text{designated} * \text{local.majority} * \text{lose}$ are positive and statistically significant, providing evidence consistent with the three hypotheses in Section 4.1.

To further interpret the parameter estimates, let us consider Column (4). The coefficient estimate on designated is 0.65, which suggests that with everything else being equal, the designated local firm would have about 65% higher market share in its local market than in other markets or other firms in its local market. The coefficient estimate on migration.ratio is 8.2. Given that the mean of migration.ratio is 0.004 and its standard deviation is 0.007 (in Table 6), one standard deviation increase in $\text{migration.ratio}_{imt}$ would increase the market share of firm i in market m by 8.2×0.007 , or 5.7%. Lastly, the coefficient estimate on $\text{designated} * \text{local.majority} * \text{lose}$ is 0.212. Hence, if 60% of voters in market m voted for a presidential candidate, and this candidate lost at the presidential election, then this event would increase the market share of the designated local firm in market m by $0.212 \times 60\%$, or 12.7%. Therefore, our estimates suggest not only that the three hypotheses of local identity are consistent with our data, but also that the local identity effects reflected in these key variables are economically significant. The estimates from other specifications in Table 7 also suggest similar interpretations.

As discussed in Section 5.1, we consider additional variables related to regionalism and elections in Korea. Table 8 reports the results using two additional presidential election variables, including `south*designated*local.majority*lose` and `(1-designated)*local.majority*win`, while Table 9 presents the results using similar variables based on both presidential elections and legislative elections. The overall results in these tables are similar to those in Table 7. However, the results in these tables show additional findings. First, Columns 1, 3, 5, and 7 of Table 8 suggest that the local identity effect captured by `designated*local.majority*lose` mostly stems from regionalism in the southeast region and the southwest region, as discussed in above. Second, Columns 2, 4, 6, and 8 of Table 8 show that the reverse story discussed in the previous section is also consistent with our data. That is, if the presidential candidate supported by the local majority won the election, this event would likely increase local market shares of firms from other regions. Third, Table 9 shows that we obtain similar results by using the outcome of both presidential and legislative elections, but that the magnitudes of the local identity effect triggered by both elections are slightly lower than those from only presidential elections. Nevertheless, all these results provide evidence particularly consistent with the hypothesis (iii).

In addition to these pieces of evidence, we also consider a severe economic downturn as an exogenous event that triggers higher identity costs. Specifically, we use `designated*unemployment.rate` and `designated*real.growth.rate` to capture the effect due to potential “protectionism” during local recession. Table 10 reports the results including these variables. The coefficient estimates on the three key variables — `designated`, `migration.ratio`, and `designated*local.majority*lose` — are all positive, and statistically and economically significant. The coefficient estimates on `designated*unemployment.rate` are also statistically significant at least in Columns 1 and 3. However, the coefficient estimates on `designated*real.growth.rate` are statistically and economically insignificant. Nevertheless, these coefficient estimates are all positive, and the estimate on `designated*unemployment.rate` in Column 3, for example, implies that one standard deviation increase in `unemployment.rate` would increase the designated local firm’s share in its local market by 2.063×0.015 , or 3.1%. These results suggest another mechanism by which local identity costs might be triggered, though its effect is not as strong as the effect from regionalism and the presidential elections in Korea.

5.3 Alternative Explanations

In the previous section, we found evidence consistent with the three hypotheses of the local identity story, and our estimates suggest that the local identity has a fairly strong and persistent effect on local market shares. However, the observed geographic variations in local market shares might still reflect alternative mechanisms that are not related to the local identity effect. In this section, we explore several other explanations.

First, the positive correlation between local market shares and **designated** might reflect transportation costs. Note that most local firms' production facilities are located in their local markets, which we ascertain by searching trade magazines and soju companies' annual reports. At least for firm 1 which is dominant in market 1 throughout all years, transportation costs might be an important factor, because market 1 is an island located far from the mainland. Transportation costs might also explain relatively higher market shares for firm 10 in local markets located closer to the Seoul region. However, firm 10 purchased a production facility from firm 2 in 1992 and has continued to operate this plant. In addition, firm 10 established another production facility in market 8, which is adjacent to five other local markets. As a result, transportation costs are unlikely to explain relatively low market shares of firm 10 in these local markets. Similarly, transportation costs do not seem to explain fairly low market shares of local firms from neighboring markets.

Second, tacit collusion could explain the geographic patterns that local firms are dominant in their local markets. One possibility is that local firms might have implicitly agreed not to enter other local firms' markets, respecting each other's "spheres of influence". This idea of "mutual forbearance" was first developed by Edwards (1955) and further formalized by Bernheim and Whinston (1990) in a model of multi-market contact with repeated interactions.³¹ They show that the development of spheres of influence naturally arises in a setting of cost differences across firms. The most obvious example is when firms' production facilities are geographically dispersed and transportation costs are significant. In such a case, each local firm would be the most efficient producer in its own market, but less efficient in other markets. Note that the optimal collusive scheme in the Bernheim and Whinston model entails complete withdrawal of inefficient firms in each market with the efficient firm making all of the sales.

However, local firms indeed entered other local markets in the soju industry, though their market shares in other markets were small. Moreover, given the price regulation and the market structure

³¹See also Byford and Gans (2010).

before the deregulation, it is unclear how each local firm would gain from this collusion. Most local firms compete with the national brand firm in their local markets. As a result, more plausible collusion is between each local firm and firm 10, the dominant firm in the nation. In particular, the rapid increase in market shares of local firms in markets 2-4 around 1997 might have resulted from potential collusion between firm 10 and local firms in these markets. Nevertheless, this collusion is also not likely, given that these local firms' market shares in markets 10 and 11, where firm 10 was the designated local company, were negligible. That is, firm 10 is not likely to have any incentive to collude with local firms, since it is unlikely to gain much benefit from this collusion.

Third, strong brand loyalty for local soju might reflect potential collusion between local firms and local distributors. Alternatively, local firms might have forced local distributors to purchase soju only from them, or penalized local distributors who sold national brands. However, this explanation is also unlikely to be important, because local distributors have little to gain from being a partner in the collusive scheme or accepting exclusive dealing contracts. The relationship between local firms and local distributors is vertical and not of horizontal competitors. Thus, it is in the interest of local distributors to promote competition among soju producers. As shown by Fumagalli and Motta (2006), local distributors would be reluctant to accept exclusive contracts if they compete at the distribution level. The reason is that a free distributor who does not sign on exclusive dealing would become more competitive and increase its volume and profits at the expense of distributors who sign an exclusive deal with the designated local firm. Moreover, the reintroduction of the mandatory local soju purchase policy in 1996 was challenged by local distributors, which is additional evidence against exclusive dealing between the local producer and local distributors. In addition, local distributors are more likely to respond to their customers' demand, and if local soju companies were engaged in anticompetitive behavior for a long period, the local distributors would eventually resist and react to such anticompetitive behavior.

Fourth, local firms' responses to the deregulatory changes might have affected local market shares. For example, the incumbents in local markets might have invested in capacity to deter entry or used preemptive product positioning. Regarding capacity investment, we did not observe any substantial increase in production capacity by most local firms during the mid 1990s, thus rejecting any possibility of preemptive capacity investment. Furthermore, Tables 7 and 10 show that the coefficient estimates on most firm specific variables such as the number of products, the number of new products, the fraction of premium soju, and total advertising expenditure are mostly

insignificant, suggesting that preemptive product positioning or proliferation is unlikely in the soju industry after the deregulation.

6 Conclusion

In this paper, we use a rare natural experiment in the Korean soju industry and empirically document significant effects of past experiences on current purchases. To investigate sources of persistent brand preferences, we propose an identity-based explanation and further explore several alternative mechanisms. We find that our data are consistent with three theoretical predictions from the local identity story but are not consistent with various other explanations. Our findings suggest that local identity, once established, can be an important source to explain the geographic variations in market shares. Moreover, our findings might be relevant to other related examples such as home bias in investment portfolios — the strong bias in favor of domestic securities as well as local firms' stocks (see, e.g., Coval and Moskowitz 1999).

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Table 1: Changes in Market Structure^a

	Regulation period (1986-1991, 1996)				Deregulation period (1992-1995, 1997-2008)			
	Mean	S.D.	Min	Max	Mean	S.D.	Min	Max
A. National Market								
share of top 2 firm	0.283	0.155	0.114	0.467	0.307	0.194	0.091	0.549
share of non-top 2 firm	0.054	0.034	0.011	0.135	0.048	0.030	0.008	0.106
C1	0.431	0.020	0.410	0.467	0.494	0.049	0.392	0.549
C2	0.567	0.030	0.547	0.635	0.613	0.033	0.553	0.646
# firms	10	0	10	10	10	0	10	10
$\rho_{\text{share}_t, \text{share}_{t-1}}$	0.998				0.993			
B. Local Market								
share of top 2 firm	0.450	0.304	0.032	0.960	0.471	0.302	0.033	0.963
share of non-top 2 firm	0.030	0.035	3.1E-05	0.177	0.016	0.024	5.6E-08	0.144
C1	0.724	0.153	0.382	0.960	0.737	0.153	0.366	0.963
C2	0.900	0.085	0.686	1.000	0.942	0.063	0.673	1.000
# firms	5.4	1.8	2	8	5.7	1.9	3	10
$\rho_{\text{share}_t, \text{share}_{t-1}}$	0.995				0.991			

^aIn the table, top 2 firm is the 1st (or 2nd) ranked firm in terms of market shares, and non-top2 firm is the firm ranked third and below. C1 (C2) is the one-firm (two-firm) concentration ratio, and $\rho_{\text{share}_t, \text{share}_{t-1}}$ is the correlation coefficient between the current share and the previous share.

Table 2: The Effect of Deregulation on Market Shares for Designated Local Companies^a

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
designated	0.693*** (0.045)	0.693*** (0.045)	0.674*** (0.042)	0.674*** (0.042)	0.674*** (0.044)	0.674*** (0.044)	0.678*** (0.043)	0.678*** (0.043)
designated*deregulation	-0.027 (0.038)		-0.026 (0.037)		-0.026 (0.039)		-0.032 (0.038)	
designated*year92		0.003 (0.014)		0.003 (0.013)		0.003 (0.014)		0.003 (0.014)
designated*year93		-0.010 (0.017)		-0.010 (0.016)		-0.010 (0.017)		-0.012 (0.015)
designated*year94		-0.068*** (0.018)		-0.068*** (0.017)		-0.068*** (0.018)		-0.072*** (0.015)
designated*year95		-0.109*** (0.035)		-0.110*** (0.033)		-0.110*** (0.034)		-0.117*** (0.032)
designated*year97		-0.051 (0.039)		-0.051 (0.037)		-0.051 (0.039)		-0.054 (0.037)
designated*year98		0.007 (0.045)		0.009 (0.043)		0.009 (0.045)		0.012 (0.041)
designated*year99		0.026 (0.044)		0.027 (0.042)		0.027 (0.044)		0.030 (0.041)
designated*year00		0.022 (0.055)		0.023 (0.055)		0.023 (0.057)		0.017 (0.055)
designated*year01		-0.011 (0.062)		-0.010 (0.062)		-0.010 (0.065)		-0.019 (0.061)
designated*year02		-0.023 (0.065)		-0.022 (0.064)		-0.022 (0.067)		-0.033 (0.064)
designated*year03		-0.017 (0.062)		-0.016 (0.062)		-0.016 (0.065)		-0.027 (0.061)
designated*year04		-0.018 (0.059)		-0.017 (0.059)		-0.017 (0.062)		-0.028 (0.057)
designated*year05		-0.020 (0.058)		-0.019 (0.058)		-0.019 (0.061)		-0.030 (0.056)
designated*year06		-0.045 (0.057)		-0.044 (0.056)		-0.044 (0.059)		-0.054 (0.057)
designated*year07		-0.050 (0.055)		-0.049 (0.055)		-0.049 (0.057)		-0.057 (0.056)
designated*year08		-0.068 (0.056)		-0.066 (0.056)		-0.066 (0.058)		-0.076 (0.057)
firm specific covariates	Yes	Yes	Yes	Yes	Yes	Yes		
market specific covariates	Yes	Yes	Yes	Yes				
year fixed effects	Yes	Yes	Yes	Yes				
firm fixed effects			Yes	Yes	Yes	Yes		
market fixed effects			Yes	Yes				
market×year fixed effects					Yes	Yes	Yes	Yes
firm×year fixed effects							Yes	Yes
R^2	0.792	0.793	0.873	0.875	0.873	0.875	0.882	0.884
N	2530	2530	2530	2530	2530	2530	2530	2530

^aThe dependent variable is the yearly local market share for firm i in market m . The sample includes the period from 1986 to 2008. **Designated** is the indicator dummy for the designated local soju company in each market, and **deregulation** is the indicator dummy for the deregulation period (i.e. 1992-1995 and 1997-2008). Standard errors are in parentheses and are clustered by firm-market. Firm specific covariates include real prices, the number of products, the number of new products, and the fraction of premium soju among all products sold by each firm. Market specific covariates include population and real growth rates. The coefficient estimates for these covariates are suppressed. * denotes significance at a 10% level, ** denotes significance at a 5% level, and *** denotes significance at a 1% level.

Table 3: Mean Value of Market Characteristics^a

market	population (in 1000)	population male (in 1000)	real GDP growth rate	unemployment rate	market volume (in 1000 liter)
A. Regulation period (1986-1991, 1996)					
1	503.4	249.0	0.086	0.008	10,173.8
2	3,774.1	1,877.7	0.088	0.033	66,681.6
3	3,588.5	1,808.8	0.110	0.016	70,574.0
4	5,076.0	2,547.8	0.089	0.019	70,502.8
5	3,618.9	1,825.5	0.104	0.016	68,695.8
6	2,075.8	1,037.5	0.079	0.017	29,384.4
7	3,040.6	1,541.6	0.107	0.018	45,572.3
8	1,389.9	702.2	0.102	0.011	20,432.2
9	1,609.2	820.6	0.065	0.010	41,154.4
10	7,838.1	3,962.3	0.117	0.024	100,624.1
11	10,200.4	5,130.1	0.094	0.035	167,652.3
B. Deregulation period (1992-1995, 1997-2008)					
1	527.5	262.5	0.041	0.020	13,385.0
2	3,703.6	1,847.8	0.037	0.047	78,860.5
3	4,040.2	2,044.3	0.057	0.027	88,014.4
4	5,194.4	2,610.6	0.047	0.032	93,418.8
5	3,366.7	1,676.7	0.041	0.030	69,496.6
6	1,887.6	937.8	0.040	0.028	34,911.9
7	3,254.1	1,644.9	0.065	0.030	62,306.9
8	1,463.6	737.7	0.054	0.025	33,344.2
9	1,498.1	757.0	0.036	0.019	43,915.6
10	11,674.2	5,911.6	0.068	0.037	172,180.4
11	10,134.9	5,087.1	0.041	0.043	245,215.2

^aThe table reports the average value of each variable over all years during the regulation (or deregulation) period. Markets 1-11 are defined in Section 3.2.

Table 4: Changes in Firm Strategic Variables^a

	# products by brand		# products brand/ABV		# new products		average ABV		fraction of premium		average price (Korean won)		total advertising (1 mil. won)	
	local	nat'l	local	nat'l	local	nat'l	local	nat'l	local	nat'l	local	nat'l	local	nat'l
1986	1.4	1.0	2.6	2.0	0.0	0.0	26.47	26.56	0.000	0.000	816	898	n.a.	n.a.
1987	1.4	1.0	2.5	1.5	0.1	0.0	26.44	26.00	0.000	0.000	824	851	n.a.	n.a.
1988	1.4	1.0	2.5	1.5	0.0	0.0	26.41	26.00	0.000	0.000	841	857	n.a.	n.a.
1989	1.4	1.0	2.5	1.5	0.0	0.0	26.30	25.83	0.000	0.000	922	1,049	n.a.	n.a.
1990	1.1	1.0	2.3	1.5	0.0	0.0	26.10	25.76	0.000	0.000	1,006	1,108	133.1	512.1
1991	1.6	1.5	2.8	2.0	0.5	0.5	26.07	25.80	0.000	0.000	1,173	1,463	191.7	702.6
1992	2.3	2.0	3.6	2.5	0.6	0.5	26.27	25.42	0.000	0.000	1,321	1,571	339.6	1,163.1
1993	3.4	3.0	4.9	3.5	1.3	1.0	25.94	24.80	0.000	0.000	1,400	1,485	292.5	1,490.5
1994	5.7	5.0	7.2	5.5	2.0	1.5	25.11	24.98	0.000	0.000	1,466	1,461	656.6	7,252.1
1995	5.7	3.5	7.2	4.5	0.2	0.0	25.01	25.00	0.000	0.000	1,527	1,345	390.6	4,968.6
1996	7.7	5.5	9.5	7.0	2.3	2.0	24.64	25.00	0.038	0.047	1,753	1,636	980.9	6,963.0
1997	6.9	5.5	8.1	6.5	0.1	1.0	24.43	25.00	0.018	0.062	1,782	1,706	1,528.1	4,842.2
1998	5.0	6.0	6.7	7.5	0.3	0.5	23.74	24.90	0.014	0.026	1,713	1,719	778.5	6,902.7
1999	6.0	6.5	7.9	8.0	0.7	2.5	23.63	24.43	0.030	0.035	1,657	1,589	1,007.9	15,769.6
2000	4.9	5.0	8.1	7.5	0.7	0.0	23.18	23.71	0.070	0.002	1,995	1,830	874.8	10,074.8
2001	4.7	4.0	7.4	6.0	0.4	0.5	22.71	22.50	0.099	0.000	2,030	1,744	293.7	14,176.8
2002	4.0	3.0	6.0	4.5	0.3	0.0	22.44	22.24	0.081	0.000	2,122	1,810	849.1	5,599.3
2003	3.1	3.0	4.4	4.5	0.0	0.0	22.27	22.18	0.064	0.000	2,200	1,940	387.1	361.5
2004	2.8	3.0	5.5	5.5	0.1	0.0	21.56	21.28	0.052	0.000	2,373	2,071	775.0	2,808.4
2005	2.6	3.5	3.9	5.0	0.1	0.5	21.31	21.16	0.043	0.000	2,329	2,428	665.5	986.5
2006	3.0	4.0	6.5	7.5	0.5	1.0	20.73	20.33	0.037	0.000	2,283	2,134	675.9	10,119.4
2007	4.4	4.0	7.8	9.0	1.3	0.0	20.42	20.04	0.034	0.000	2,441	2,234	972.8	4,504.8
2008	4.0	5.5	6.9	12.0	0.1	1.5	20.21	19.89	0.032	0.000	2,533	2,258	490.1	2,830.3

^aThe table reports the mean values of each variable for local firms as well as national firms. Local firms include firms 1-8 defined in Section 3.2, and national firms include firms 9-10. Note that firm 9 became a national firm after it was acquired by a national conglomerate in 1994. Average ABV is the average percentage alcohol by volume for all products, and the fraction of premium is the fraction of premium soju among all products. Average price is the unweighted average of nominal prices of all products. Total advertising is the firm-level advertising expense reported by the KADD.

Table 5: Presidential and Legislative Elections Results^a

Election Date	Election was won by a candidate or a party based on the region		Ratio of voters in the region I who voted for a candidate or party based on region II						
	Southeast	Southwest	I:	Southeast		Southwest		Other	
			II:	SE	SW	SE	SW	SE	SW
A. Presidential Election									
1992.12.18.	Yes	No		0.69	0.10	0.05	0.90	0.38	0.28
1997.12.18.	No	Yes		0.57	0.13	0.04	0.92	0.35	0.38
2002.12.19.	No	Yes		0.68	0.26	0.05	0.92	0.44	0.49
2007.12.19.	Yes	No		0.61	0.11	0.09	0.80	0.45	0.24
B. Legislative Election									
1992.3.24.	Yes	No		0.48	0.12	0.26	0.60	0.37	0.24
1996.4.11.	Yes	No		0.43	0.04	0.18	0.68	0.33	0.19
2000.4.13.	Yes	No		0.55	0.13	0.04	0.65	0.36	0.38
2004.2.15.	No	Yes		0.51	0.32	0.00	0.56	0.36	0.44
2008.4.9.	Yes	No		0.51	0.07	0.07	0.58	0.41	0.32

^aThe ratio of voters is the number of people who voted for a candidate, divided by the number of those who actually voted in the election, where the information on the number of voters is obtained from the Korean National Election Commission. Presidential candidates (and their parties) based on the southeast region and on the southwest region are respectively Kim, Young-sam (Democratic Liberal Party) and Kim, Dae-jung (Democratic Party) in 1992; Lee, Hoi-chang (Grand National Party) and Kim, Dae-jung (New Congress for New Politics) in 1997; Lee, Hoi-chang (Grand National Party) and Roh, Moo-hyun (Millennium Democratic Party) in 2002; Lee, Myung-bak (Grand National Party) and Chung Dong-young (United New Democratic Party) in 2007. A legislative election is defined to be won if a party won the majority of seats in the Korean National Assembly. SE stands for southeast which includes the markets 2-4; SW stands for southwest which includes the markets 5-6; and other includes the markets 1, 7-11.

Table 6: Summary Statistics of Variables Used in Regressions^a

Variable	Mean	S.D.	Min	Max
designated	0.100	0.300	0	1
migration.ratio	0.004	0.007	0	0.042
designated*local.majority*lose (presidential election)	0.020	0.115	0	0.925
local.majority*lose (presidential election)	0.201	0.308	0	0.925
south*designated*local.maj*lose (presidential election)	0.017	0.108	0	0.925
(1-designated)*local.maj*win (presidential election)	0.340	0.309	0	0.942
designated*local.majority*lose (presidential & legislative)	0.020	0.108	0	0.925
(1-designated)*local.maj*win (presidential & legislative)	0.297	0.282	0	0.942
real.price (in 1000 won)	2.225	0.316	1.573	3.194
#product	4.138	1.832	1	11
#new.product	0.544	0.765	0	4
frac.premium	0.029	0.089	0	0.485
total.ad (in billion won)	1.927	3.308	0.006	18.596
pop.m.20-59 (in million)	1.298	1.104	0.146	4.460
pop.f.20-59 (in million)	1.248	1.071	0.139	4.221
designated*unemp.rate	0.003	0.010	0	0.091
unemployment.rate	0.031	0.015	0.008	0.091
designated*growth.rate	0.005	0.021	-0.132	0.169
real.growth.rate	0.048	0.050	-0.132	0.169

^aThe table reports summary statistics from the observations during the deregulation period. **Designated** is an indicator variable for whether firm i was the designated local soju company in market m before deregulation. **Migration.ratio** $_{i,m,t}$ is the number of people in market m in year t who moved from the market where firm i was the local designated soju company before deregulation. **Pop.m.20-59** (**pop.f.20-59**) is the population of males (females) aged between 20 and 59 living in market m . For the definition of variables related to elections, see Section 5.1.

Table 7: Baseline Estimates with Presidential Election Variables^a

	(1)	(2)	(3)	(4)	(5)
designated	0.664*** (0.049)	0.628*** (0.045)	0.630*** (0.046)	0.651*** (0.067)	
migration.ratio	10.802*** (1.468)	7.585*** (1.343)	7.650*** (1.416)	8.235*** (1.700)	
designated*local.maj*lose (presidential election)	0.206*** (0.077)	0.243*** (0.070)	0.240*** (0.072)	0.212** (0.107)	0.156*** (0.056)
local.majority*lose (presidential election)	-0.014 (0.011)	-0.028** (0.012)			
real.price	0.011 (0.010)	0.013* (0.007)	0.012 (0.008)		
#product	-0.001 (0.001)	-0.001 (0.003)	-0.001 (0.003)		
#new.product	-0.002 (0.003)	-0.000 (0.003)	-0.000 (0.003)		
frac.premium	0.029 (0.095)	-0.042 (0.077)	-0.043 (0.079)		
total.ad	0.007*** (0.002)	0.001 (0.001)	0.001 (0.001)		
pop.m.20-59	-0.054 (0.142)	-0.008 (0.146)			
pop.f.20-59	0.068 (0.146)	0.011 (0.157)			
unemployment.rate	-0.179 (0.249)	0.227 (0.613)			
real.growth.rate	-0.021 (0.037)	-0.017 (0.052)			
year fixed effects		Yes			
firm fixed effects		Yes	Yes		
market fixed effects		Yes			
market×year fixed effects			Yes	Yes	Yes
firm×year fixed effects				Yes	Yes
firm×market fixed effects					Yes
R^2	0.877	0.891	0.892	0.894	0.962
N	1463	1463	1463	1760	1760

^aThe dependent variable is the yearly local market share for firm i in market m . The sample includes only the deregulation period (i.e. 1992-1995 and 1997-2008). Standard errors are in parentheses and are clustered by firm-market. * denotes significance at a 10% level, ** denotes significance at a 5% level, and *** denotes significance at a 1% level. Note that `total.ad` is not observed for all firms in all years, which explains that N is smaller when `total.ad` is included in the regression.

Table 8: Further Estimates with Presidential Election Variables ^a

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
designated	0.633*** (0.046)	0.751*** (0.044)	0.635*** (0.047)	0.753*** (0.045)	0.655*** (0.068)	0.760*** (0.053)		
migration.ratio	7.468*** (1.341)	8.256*** (1.363)	7.531*** (1.414)	8.316*** (1.445)	8.120*** (1.691)	8.684*** (1.635)		
designated*local.maj*lose	-0.024 (0.092)		-0.028 (0.094)		-0.045 (0.147)		-0.032 (0.071)	
south*designated*local.maj*lose	0.294*** (0.090)		0.295*** (0.094)		0.285** (0.117)		0.211** (0.097)	
local.majority*lose	-0.001 (0.015)							
south*local.maj*lose	-0.029 (0.019)							
(1-designated)*local.maj*win		0.167* (0.089)		0.166* (0.093)		0.166* (0.095)		0.152*** (0.052)
local.maj*win		-0.149* (0.083)						
firm specific covariates	Yes	Yes	Yes	Yes				
market specific covariates	Yes	Yes						
year fixed effects	Yes	Yes						
firm fixed effects	Yes	Yes	Yes	Yes				
market fixed effects	Yes	Yes						
market×year fixed effects			Yes	Yes	Yes	Yes	Yes	Yes
firm×year fixed effects					Yes	Yes	Yes	Yes
firm×market fixed effects						Yes	Yes	Yes
R^2	0.894	0.887	0.894	0.887	0.896	0.892	0.963	0.963
N	1463	1463	1463	1463	1760	1760	1760	1760

^aThe dependent variable is the yearly local market share for firm i in market m . The sample includes only the deregulation period (i.e. 1992-1995 and 1997-2008). Standard errors are in parentheses and are clustered by firm-market. Firm specific covariates include real prices, the number of products, the number of new products, and the fraction of premium soju among all products sold by each firm. Market specific covariates include population and real growth rates. The coefficient estimates for these covariates are suppressed. * denotes significance at a 10% level, ** denotes significance at a 5% level, and *** denotes significance at a 1% level.

Table 9: Estimates with Variables Related to Presidential and Legislative Elections^a

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
designated	0.646*** (0.043)	0.725*** (0.045)	0.648*** (0.044)	0.727*** (0.047)	0.659*** (0.063)	0.739*** (0.052)		
migration.ratio	7.926*** (1.361)	8.303*** (1.386)	7.990*** (1.435)	8.365*** (1.466)	8.417*** (1.667)	8.710*** (1.646)		
designated*local.maj*lose (presidential & legislative)	0.186*** (0.056)		0.184*** (0.057)		0.183* (0.095)		0.118*** (0.033)	
local.majority*lose	-0.022*** (0.010)							
(1-designated)*local.maj*win (presidential & legislative)		0.108** (0.046)		0.107** (0.048)		0.127** (0.051)		0.106*** (0.038)
local.maj*win (presidential & legislative)		-0.095** (0.044)						
firm specific covariates	Yes	Yes	Yes	Yes				
market specific covariates	Yes	Yes						
year fixed effects	Yes	Yes						
firm fixed effects	Yes	Yes	Yes	Yes				
market fixed effects	Yes	Yes						
market×year fixed effects			Yes	Yes	Yes	Yes	Yes	Yes
firm×year fixed effects					Yes	Yes	Yes	Yes
firm×market fixed effects						Yes	Yes	Yes
R^2	0.887	0.883	0.888	0.884	0.892	0.890	0.961	0.961
N	1463	1463	1463	1463	1760	1760	1760	1760

^aThe dependent variable is the yearly local market share for firm i in market m . The sample includes only the deregulation period (i.e. 1992-1995 and 1997-2008). Standard errors are in parentheses and are clustered by firm-market. Firm specific covariates include real prices, the number of products, the number of new products, and the fraction of premium soju among all products sold by each firm. Market specific covariates include population and real growth rates. The coefficient estimates for these covariates are suppressed. * denotes significance at a 10% level, ** denotes significance at a 5% level, and *** denotes significance at a 1% level.

Table 10: Estimates with “Protectionism” Variables^a

	(1)	(2)	(3)
designated	0.510*** (0.069)	0.577*** (0.114)	
migration.ratio	8.024*** (1.381)	8.634*** (1.577)	
designated*local.maj*lose	0.243*** (0.063)	0.204** (0.100)	0.154*** (0.049)
designated*unemp.rate	3.325*** (1.047)	2.504 (1.545)	2.063*** (0.780)
designated*real.growth.rate	0.299 (0.210)	0.042 (0.263)	0.130 (0.102)
real.price	0.013 (0.008)		
#product	-0.002 (0.003)		
#new.product	-0.000 (0.003)		
frac.premium	-0.042 (0.073)		
total.ad	0.001 (0.001)		
firm fixed effects	Yes		
market×year fixed effects	Yes	Yes	Yes
firm×year fixed effects		Yes	Yes
firm×market fixed effects			Yes
R^2	0.896	0.896	0.963
N	1463	1760	1760

^aThe dependent variable is the yearly local market share for firm i in market m . The sample includes only the deregulation period (i.e. 1992-1995 and 1997-2008). Standard errors are in parentheses and are clustered by firm-market. * denotes significance at a 10% level, ** denotes significance at a 5% level, and *** denotes significance at a 1% level.

Figure 1: Changes in Local Market Shares

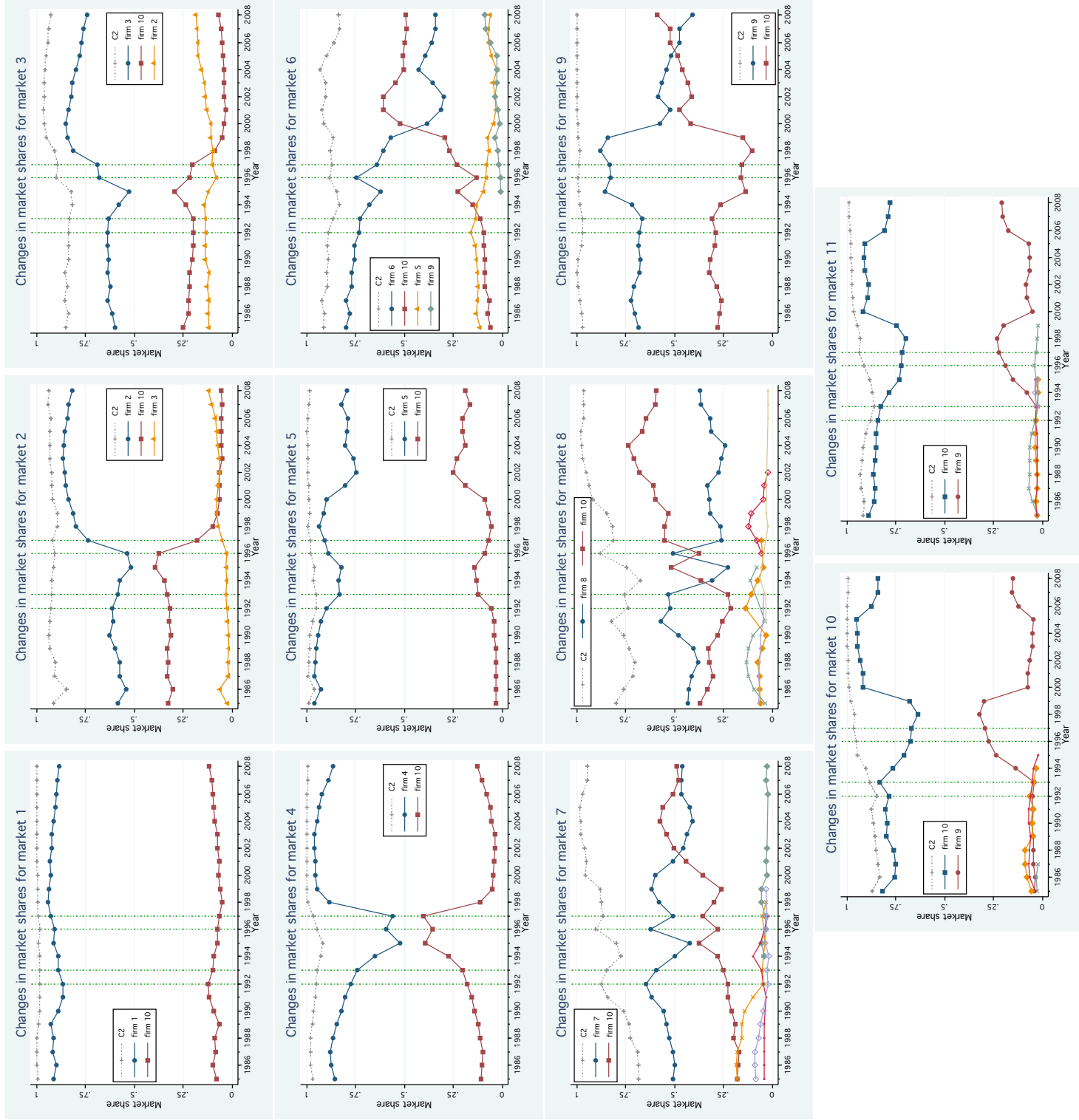


Figure 2: Biannual Changes in Nominal Prices for Individual Products

