# Retail Format as a Barrier to Entry*

Avi Goldfarb
University of Toronto

Sampsa Samila
Brock University

Brian Silverman
University of Toronto

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We raise the possibility that entry barriers to an industry may be located in the marketing tactics of related industries rather than in the focal industry itself. Specifically, we use an experiment conducted by the Swedish government alcohol monopoly in which a group of stores was converted from behind-the-counter sales to self-service sales. The format change is coincident with a significant drop in the concentration of sales across concentration measures and product categories. Further, new products do considerably better in self-service than in behind-the-counter stores. These results suggest that policies that require behind-the-counter sale of consumer products (as commonly seen in tobacco, alcohol, and pharmaceuticals) may inadvertently benefit incumbent firms.

Keywords: barriers to entry, market concentration, retail

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## Abstract

We raise the possibility that entry barriers to an industry may be located in the marketing tactics of related industries rather than in the focal industry itself. Specifically, we use an experiment conducted by the Swedish government alcohol monopoly in which a group of stores was converted from behind-the-counter sales to self-service sales. The format change is coincident with a significant drop in the concentration of sales across concentration measures and product categories. Further, new products do considerably better in self-service than in behind-the-counter stores. These results suggest that policies that require behind-the-counter sale of consumer products (as commonly seen in tobacco, alcohol, and pharmaceuticals) may inadvertently benefit incumbent firms.



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There is a rich literature in economics and policy discussing the causes and consequences of barriers to entry going back to Bain (1956) and even Wallace (1936). In marketing, Weitz (1985) introduces a special issue of the *Journal of Marketing Research* that provides an early summary of the role of barriers to entry in generating marketing-related profits. The theoretical literature has identified a number of possible barriers to entry including advertising (Schmalensee 1983), contracts (Aghion and Bolton 1987), and excess capacity (Spence 1977). Empirical findings have been quite diverse and often contradictory. An almost universal theme in the empirical literature, however, has been the search for entry barriers within the focal market itself.[1] But could the marketing tactics used in other industries serve as a barrier to entry in the focal industry? If so, then what are the implications for marketers and for policy? Specifically, can the nature of (retail) interactions between downstream buyers and sellers affect upstream concentration and entry?

We answer this question affirmatively using a field experiment conducted by the Swedish state alcohol retail monopoly that randomly changed some stores from behind-the-counter to self-service sales format. Pairs of stores were matched by demographics and by alcohol sales; one was chosen randomly to move to self-service and the other retained the behind-the-counter format. Each of the 14 stores was the only store in its town. We focus on the concentration of sales and find that the Hirschmann-Herfindahl Index (henceforth Herfindahl) across products fell 16% in the treated stores, even as prices and products offered did not change in the treatment stores relative to the control stores.[2] The timing of the change in concentration is coincident with

[1] The one exception we found links bank competition to entry in other industries (Cetorelli and Strahan 2006). The literature on slotting allowances (e.g. Sudhir and Rao 2006; Shaffer 1991) is related but it (by definition) focuses on vertical relationships between the focal market and the retail market rather than on the structure of the retail market itself.

[2] Sutton (1991) finds that concentration is related to barriers to entry manifested as both exogenous and endogenous costs. Berry (1992) finds that lowering entry barriers reduces concentration in a market. We interpret high concentration as circumstantial evidence of barriers to entry.

the change in store format and the results are robust across product categories and across different definitions of concentration. Furthermore, sales of products launched after the change were 51% higher in self-service stores even though promotions and advertising are prohibited.

What specific barrier to entry is generated by the behind-the-counter format? Although determining the precise mechanism is beyond the reach of our data, the most likely explanation relates to information costs. Indeed, Demsetz (1982, p. 50) describes the cost of obtaining information as a "fundamental barrier to entry" that makes a reputable history a valuable asset. Relatedly, Schmalensee's (1982) model of pioneering advantages under imperfect information suggests that information costs (rather than advertising per se) slows consumer adoption and thus can deter new entry. The self-service format allows consumers to easily access information about products, particularly on non-price attributes. In this way, our finding of retail format as a barrier to entry is consistent with Brynjolfsson, Hu, and Simester's (2007) evidence that reduced search costs online lead to more variety sold. Another possible source of the barrier relates to the change in the interaction between customers and staff. Self-service stores allow customers to peruse the aisles self-guided at their leisure and then carry selected products to the cashier. In behind-the-counter stores one searches through a catalog and then requests a product from the salesperson – with possibly several other customers waiting in line and a chance that the salesperson will return from the back to announce that the requested item is not in stock. Evidence from psychology suggests that time pressure is likely to result in selection of less risky alternatives, or familiar rather than new products (Ben-Zur and Breznitz, 1981).

A growing theoretical and practitioner literature links marketing tactics to anticompetitive behavior. Theoretical models have suggested that several marketing practices have potential to raise anticompetitive concerns, including category management (e.g. Gajanan, Basuroy, and

Beldona 2007), slotting allowances (e.g. Shaffer 1991), and, of course, a number of pricing strategies (Stole 2007 provides a recent review). Bush and Gelb (2005) discuss a variety of such marketing practices that have recently received antitrust scrutiny from the Federal Trade Commission, particularly category management, slotting allowances, incentive programs, and joint marketing initiatives.

Our study's finding of a link between retail format and market concentration is important not only due to the size of the effect but also due to the ubiquity of the behind-the-counter format. In numerous jurisdictions in North America and Europe, many goods are sold behind the counter by law including pharmaceuticals, alcohol, and cigarettes. Understanding how the format affects sales is important to the regulators who develop the rules and to the firms who develop strategies under the regulations.

Of particular interest is the recent push in the United States to develop a separate class of drugs that would be sold without a prescription, but behind the counter, requiring interaction with a pharmacist.[3] A recent GAO study (GAO 2009) outlined the arguments for and against such a policy, mostly covering drug availability and the net cost impact from substituting more interaction with pharmacists for less interaction with doctors. Our results suggest another potential impact: restricting entry into drugs that have been classified into this group. The impact of reduced entry on costs and development of drugs could be considerable.

Alcohol is another product that is sold behind the counter in several jurisdictions (in addition to Sweden). Our analysis helps understand the consequences for, and perhaps the reasons behind, this format. For example, in Ontario, Canada, the main distribution channel for beer is through "The Beer Store." This retailer is owned by the three largest Canadian breweries:

[3] Currently, several drugs that can be used to produce methamphetamines must be sold behind the counter by a special stipulation in the Patriot Act of 2006, but there is no official class of non-prescription behind-the-counter drugs.

Labatt (a subsidiary of Interbrew), Molson (part of Molson-Coors), and Sleeman. The majority of the Beer Stores in Ontario have behind-the-counter service. Our results suggest that this helps the main brewers maintain their dominant share. Although the Beer Store's operational report (2007, p. 3) emphasizes that "Any brewer in the world can sell their beer through the beer store" and that the brewers set their own prices, the behind-the-counter format itself may restrict the ability of new entrants to gain share. The vertical integration of the industry, combined with regulation, generates incentives for the behind-the-counter format.

In developing countries, the behind-the-counter format is common even in unregulated industries. For example, in India, the dominant retail format is the kirana, a type of general store where the vast majority of items are behind the counter (*The Economist* 2008). Although supermarkets and other forms of organized retail are growing in India and elsewhere in the developing world, sales in kirana stores continue to grow in absolute, if not relative, terms (Reardon and Gulati 2008). Humphrey (2007) notes that behind-the-counter stores still have substantial shares in Brazil, Mexico, and Kenya, although much of this share is in fresh (not packaged) food. Assuming that our results from Sweden carry over to the diverse contexts of developing countries, the ubiquity of the behind-the-counter format may have substantial effects on market structure and, due to restrictions on entry, even on development outcomes.

## 2. Empirical Setting and Data

Our data come from a field experiment conducted by the Swedish national alcohol retail monopoly, Systembolaget, in the early 1990s.[4] In 1990, Systembolaget operated roughly 400 stores throughout Sweden to serve a population of 8.5 million. Sales of wine, distilled spirits, and

[4] Many of the details that follow come from Skog's (2000) assessment of the impact of this experiment on alcohol consumption.

"strong beer" (above 3.5% alcohol) by any other retailers were prohibited. Many other retailers sell beer with up to 3.5% alcohol.

Systembolaget conducted a field experiment to explore the effect of a self-service retail format on aggregate alcohol sales.[5] Although we are not interested in the effect on alcohol sales per se, the experiment provides a convenient way to explore how a change in retail format affects the concentration of sales. To identify the effects and reduce the chances of simply cannibalizing sales across stores, Systembolaget chose 14 towns that each had a single retail store for alcohol sales. Thus Stockholm and other large cities in Sweden are not in the data. According to Skog (2000, p. 96), Systembaloget used data from 1984 through 1989 to match the towns into seven pairs "in such a way as to make the members of each pair as similar as possible in terms of population size, economic bases and sales of alcoholic beverages; the latter both in terms of volume per capita and pattern of variation over time." The pairs were also chosen to be sufficiently far apart geographically to prevent spillover effects. The member of the pair chosen for the treatment was decided by randomization. Table 1a lists the pairs and their characteristics.

Three aspects of Systembolaget and Sweden make the experimental setting especially clean.[6] First, during the experiment, prices (which are based on a fixed, legislated per-unit markup) and products offered did not change in the treatment stores relative to the control stores. All that changed was the format of the store. Thus we can focus on the consumer response without worrying about controlling for endogenous changes in price and product offerings. Second, Systembolaget is a monopoly seller of alcohol (above 3.5%-vol.) within Sweden and

[5] Sweden has a history of using experiments to understand how changes in retail policy affect alcohol consumption. For example, a 1967 experiment allowed beer with over 3.5% alcohol to be sold in some grocery stores. Nilsson (2008) uses this experiment to examine how alcohol exposure in utero affects lifetime earnings and education.

[6] Our research fits in a long line of literature that leverages the rich data and regulatory variation available on alcohol sales and marketing (e.g. Seim and Waldfogel 2009; Clements and Selvanathan 1988; Milyo and Waldfogel 1999; Tremblay and Tremblay 2006).

therefore competitor responses to the change in format are unlikely to be relevant outside of weak beer and non-alcoholic drinks. Third, advertising and promotions are banned for alcohol above 2.25% (although foreign magazines sold in Sweden were allowed to carry alcohol advertisements), thus removing concerns about endogenous changes in marketing expenditures by alcohol manufacturers in response to the format change.

All items sold in Systembolaget stores are listed in a catalog, or menu. Every store provides the same menu, although not every store stocks every item. Figure 1a shows a sample page from a 1991 menu covering red wines. It lists the product names (sorted by category) and their prices. Figure 1b shows a picture of a typical behind-the-counter store. Customers approach the counter and order verbally. A clerk then retreats to the back of the store to retrieve the items. Figure 1c shows a typical self-service store. This is the familiar retail environment where customers roam the aisles, pick up items, and bring the items to the cashier in order to pay.

Our data contain monthly sales and prices for each product at each of the 14 stores in the experiment from January 1988 through December 1996. Systembolaget divides its products into seven main categories: Vodka, other spirits, wine, fortified wine, Swedish beer, imported beer, and non-alcoholic drinks.

We examine the data at the month-store-category level and examine the concentration of sales by category for each store and each month. We construct six different measures of sales concentration. Our primary measure is a Herfindahl index of units sold by product. In this measure, we consider different stock-keeping units (SKUs) of the same product to be the same (e.g. the 500 mL and 1000 mL bottles of Absolut vodka). We calculate the sum of the squared market shares in each store-category-month. Our second measure is also a Herfindahl index, but we use volume sold rather than units sold as our measure of quantity. Third, we calculate a unit-

level Herfindahl but treat each SKU as a different product. Fourth, we generate a four-product concentration ratio (C4). Fifth, we use the market share of the top product (C1). And sixth, we explore percentage sales by product quintile. In addition to measuring the effect on sales concentration, we also explore what happens to aggregate units sold, volume sold, revenue, and price. Table 1b provides descriptive statistics.

Comparing changes in our main Herfindahl measure in the treatment and control groups foreshadows our core results. Figure 2 compares the Herfindahl levels in each product category for the treatment and control groups for the four quarters preceding and following the change. The Herfindahl clearly drops in the treatment stores across categories when the stores change format. The same is not true in the control stores. More generally, the average Herfindahl across all store-category-months before the change in format is 0.1235. After the change, it is 0.0948. In the control group, the average Herfindahl goes from 0.1124 to 0.1043. Thus, although there is an underlying trend to decreased concentration, the treatment group's Herfindahl falls 23% and the control group's falls 7%.

## 2. Effects of the Format Change on Total Sales and Purchase Concentration

### *2.1 Empirical Strategy*

In order to estimate the effect of the retail format change on total sales (defined in units, liters, and revenue) and purchase concentration, we use a straightforward difference-in-difference identification strategy. For store *s*, product category *j*, and month *t*, our estimating equation for each of the four outcomes listed above is:

$$(1) \qquad Outcome_{sjt} = \beta TreatmentGroup_{sj} * AfterTreatment_{sjt} + \mu_{sj} + \nu_t + + \varepsilon_{sjt}$$

The analysis then controls for store-product category fixed effects ($\mu_{sj}$) and month fixed effects ($\nu_t$). Thus, the regression controls for differences across stores at the category level and

for changes over time. The coefficient $\beta$ will therefore show how outcomes in the treatment group of stores change after conversion to self-service compared to how outcomes change in the control group of stores over the same period of time. We cluster the standard errors by store in order to reduce the potential to overstate significance due to the fact that a given location is observed several times (Bertrand, Duflo, and Mullainathan 2004). Because our data come from a true randomized field experiment, the typical challenges of endogeneity and omitted variables bias in difference-in-difference studies should not be a cause for concern; the differences between the treatment and control groups should be random. Nevertheless, we check that the timing of the change in sales concentration is coincident with the format change.

### *2.2 Results for Sales Quantity and Concentration*

Columns 1 through 3 of Table 2 show that the retail format change results in an increase in sales, whether measured by units, volume, or revenue. This is consistent with the findings of Skog (2000).[7] Interestingly, Column 4 shows that the average price paid did not change. Thus, there does not appear to be a sharp change in the use of price information between the two retail formats and customers appear to substitute between similarly priced products.

We now turn to the heart of our results. Table 3 shows how the concentration of sales changes after the format change, for our various measures of sales concentration. Column 1 shows the main result, an estimated marginal effect of 0.0180 percentage points on the Herfindahl measured with product-level shares of units sold. This represents a substantial 16.6% drop from the average Herfindahl in January 1991 of 0.1083. The remaining columns show robustness to alternative measures of the concentration of sales, explained above: two different

[7] Despite the increase in alcohol purchases, Systembolaget decided to convert all stores to self-service because of high customer satisfaction with the new format.

ways to calculate the Herfindahl, the four-product concentration ratio, and the one-product concentration ratio. The results across the range of measures are highly consistent.

We next extend the analysis to encompass changes in concentration over time. Rather than a simple discrete variable identifying the time a store changes format, we replace the *Self-serve stores after change* variable with a sequence of dummy variables for the quarters before and after the format change. As Figure 3 shows, prior to the change of format stores in the treatment group (i.e. stores that change format) exhibit no trend significant towards decreased product concentration. The timing of the change in the estimated coefficients is coincident with the timing of the change in format.

As a further robustness check, Table 4 shows that the core results are consistent across product categories across a range of concentration measures. The coefficients for domestic and foreign beer have the same sign as all other categories, but fail to reach significance. This difference seems to be due primarily to the larger standard errors compared to other categories. This does not seem to be driven by the prior concentration figures in the beer categories, nor by the available number of beer SKUs, as both beer categories fall in the middle range of the other product categories on these measures. It also does not appear to be driven by informational spillovers from retail channels that sell 3.5%-or-less alcohol – although beer is likely more affected by such channels than wine or spirits, non-alcoholic beverages should be affected most of all; however, the non-alcoholic drink category experiences a significant decrease in concentration.

Table 5 examines how the format change correlates with the distribution of sales, defined by quintile. The dependent variable in each column is the percentage of total sales by month-store-category represented by that quintile. Column (1) examines the top 20% of products and

reiterates the earlier result that the fraction of sales going to the top-selling products falls after the format change. The remaining columns show that the entire lower 80% of the distribution experiences a relative gain in sales after the format change Especially striking is the relative increase in market share as one moves towards the bottom quintile. Indeed, the market share of the bottom quintile increases over 50% from prior levels.

Thus far our results indicate that the retail format change produces a substantial increase in sales that is spread more widely across products than were prior sales. We now go a step further to assess directly the impact on new products. Figure 4 compares sales of all new products in the treatment and control stores. Products are defined as new (for both treatment and control store in a pair) if they were launched after the treatment store switched to the self-service format. Because there is no "before" period for these products, we cannot run difference-in-difference regressions. Instead, we simply contrast average sales, defined by units sold and volume sold. We find that new products sell 51% more units and 45% more volume in self-service stores relative to behind-the-counter stores. Although this represents only a partial correlation, it is still strong evidence suggesting that new entrants fare better in the self-serve retail format than in the behind-the-counter format.

## 3 Conclusion

We have shown that retail format has a substantial impact on sales concentration and on the success of new products. Our results suggest that the nature of interactions downstream can have considerable impact upstream in terms of perpetuating the dominance of popular products and creating barriers to entry for new products. More broadly, we raise the question of the extent to which changes in marketing tactics in one market can have significant impacts on other markets, either upstream or downstream. Hence, our research has implications for understanding

how barriers to entry form. This matters to marketers who may seek to generate barriers in order to raise profit potential and to policy-makers who typically seek to broaden competition. By enforcing a behind-the-counter format in regulated industries like alcohol, tobacco, and pharmaceuticals, governments may inadvertently be increasing the profitability of the incumbent firms.

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Table 1a: Treatment and control stores and characteristics (as of January 1991)

| Towns | Treatment or control | Date of change | Town Population | Sales (units) | Herfindahl (products, units sold) | Sales (Liters) | Revenue in million Krona |
|---|---|---|---|---|---|---|---|
| Filipstad | Treatment | June 1991 | 13296 | 58413 | 0.1309 | 28404 | 234.7 |
| Nybro | Control | None | 20997 | 53542 | 0.1270 | 27764 | 281.0 |
| Köping | Treatment | July 1991 | 26345 | 97701 | 0.1126 | 50513 | 418.0 |
| Säffle | Control | None | 17960 | 46807 | 0.1082 | 23581 | 223.2 |
| Vänersborg | Treatment | Nov. 1991 | 36734 | 99028 | 0.0925 | 51084 | 449.0 |
| Lidköping | Control | None | 36097 | 84143 | 0.0959 | 43611 | 374.4 |
| Motala | Treatment | May 1992 | 42223 | 92758 | 0.1184 | 48069 | 441.3 |
| Falun | Control | None | 54364 | 123305 | 0.0779 | 69196 | 614.2 |
| Karlshamn | Treatment | Sept. 1993 | 31407 | 82538 | 0.1220 | 43830 | 425.8 |
| Lerum | Control | None | 33548 | 88043 | 0.0846 | 46687 | 345.5 |
| Ludvika | Treatment | Sept. 1994 | 29144 | 78178 | 0.1252 | 41441 | 371.6 |
| Vetlanda | Control | None | 28170 | 65646 | 0.1098 | 33069 | 307.0 |
| Mariestad | Treatment | Jan. 1995 | 24847 | 92972 | 0.1044 | 47584 | 427.6 |
| Värnamo | Control | None | 31314 | 88514 | 0.1069 | 45906 | 424.1 |

Table 1b: Store-category-level descriptive statistics (unit of observation is the month-store-category)

| | Mean | Std. Dev. | Minimum | Maximum | # obs. |
|---|---|---|---|---|---|
| Herfindahl (products, units sold) | 0.1096 | 0.0806 | 0.0045 | 0.7929 | 10570 |
| Herfindahl (products, mL sold) | 0.1085 | 0.0827 | 0.0043 | 0.7979 | 10570 |
| Herfindahl (SKUs, units sold) | 0.0767 | 0.0670 | 0.0038 | 0.7929 | 10570 |
| C4 (products, units sold) | 0.5014 | 0.2126 | 0.0543 | 1 | 10570 |
| C1 (products, units sold) | 0.2137 | 0.1213 | 0.0141 | 0.8896 | 10570 |
| Units sold | 14831.8 | 18331.9 | 23 | 159917 | 10570 |
| Liters sold | 7487.0 | 8621.1 | 15.1 | 6.32e+04 | 10570 |
| Revenue in million Krona | 61.2 | 57.9 | 0.0335 | 400 | 10570 |
| Price per mL | 10.91 | 9.57 | 1.27 | 93.72 | 10570 |

Table 2: Format change increases sales, but does not affect average price.

| Dependent variable → | (1) Log sales in units | (2) Log sales in volume (mL) | (3) Log sales in Krona | (4) Log price per mL sold |
|---|---|---|---|---|
| Self serve stores after change | 0.2283 (0.0230)** | 0.2092 (0.0245)** | 0.2125 (0.0218)** | 0.0032 (0.0066) |
| $R^2$ | 0.39 | 0.43 | 0.44 | 0.44 |
| Avg. Value in Jan. 1991 | 11760 | 6123940 | 5.44e+07 | 10.567 |

Regressions include store-category fixed effects (differenced out) and 107 monthly fixed effects.
Robust standard errors clustered by store in parentheses.
Each regression has 10570 observations and 98 store-category groups.
* significant at 5%; ** significant at 1%

Table 3: Format change reduces the concentration of sales.

| Dependent variable → | (1) Herfindahl (products, units sold) | (2) Herfindahl (products, volume sold) | (3) Herfindahl (SKUs, units sold) | (4) C4 (products, units sold) | (5) C1 (products, units sold) |
|---|---|---|---|---|---|
| Self serve stores after change | -0.0180 (0.0030)** | -0.0170 (0.0037)** | -0.0168 (0.0029)** | -0.0443 (0.0038)** | -0.0250 (0.0067)** |
| $R^2$ | 0.18 | 0.18 | 0.21 | 0.32 | 0.15 |
| Avg. Value in Jan. 1991 | 0.1083 | 0.1063 | 0.0750 | 0.5217 | 0.2073 |

Regressions include store-category fixed effects (differenced out) and 107 monthly fixed effects.
Robust standard errors clustered by store in parentheses.
Each regression has 10570 observations and 98 store-category groups.
* significant at 5%; ** significant at 1%

Table 4: Decline in concentration is robust across most product categories

| | (1) Vodka | (2) Spirits | (3) Wine | (4) Fortified Wine | (5) Domestic Beer | (6) Foreign Beer | (7) Non-alcoholic |
|---|---|---|---|---|---|---|---|
| | | | | HERFINDAHL (PRODUCTS, UNITS SOLD) | | | |
| Self serve stores | -0.0373 | -0.0173 | -0.0032 | -0.0165 | -0.0061 | -0.0004 | -0.0386 |
| after change | (0.0056)** | (0.0031)** | (0.0011)* | (0.0049)** | (0.0126) | (0.0133) | (0.0107)** |
| $R^2$ | 0.92 | 0.77 | 0.85 | 0.87 | 0.74 | 0.35 | 0.77 |
| Avg. in Jan. 1991 | 0.2246 | 0.0714 | 0.0141 | 0.1142 | 0.0946 | 0.1168 | 0.1225 |
| | | | | HERFINDAHL (ML, UNITS SOLD) | | | |
| Self serve stores | -0.0380 | -0.0194 | -0.0031 | -0.0147 | -0.0077 | -0.0057 | -0.0373 |
| after change | (0.0053)** | (0.0033)** | (0.0011)* | (0.0045)** | (0.0098) | (0.0120) | (0.0168)* |
| $R^2$ | 0.92 | 0.76 | 0.85 | 0.85 | 0.79 | 0.42 | 0.71 |
| Avg. in Jan. 1991 | 0.2209 | 0.0725 | 0.0141 | 0.1125 | 0.0992 | 0.1169 | 0.1077 |
| | | | | FOUR-PRODUCT CONCENTRATION RATIO (C4) | | | |
| Self serve stores | -0.0532 | -0.0873 | -0.0126 | -0.0254 | -0.0251 | -0.0392 | -0.0672 |
| after change | (0.0075)** | (0.0135)** | (0.0050)* | (0.0109)* | (0.0255) | (0.0250) | (0.0195)** |
| $R^2$ | 0.93 | 0.85 | 0.93 | 0.83 | 0.87 | 0.71 | 0.60 |
| Avg. in Jan. 1991 | 0.8210 | 0.4466 | 0.1393 | 0.5614 | 0.5249 | 0.5778 | 0.5807 |

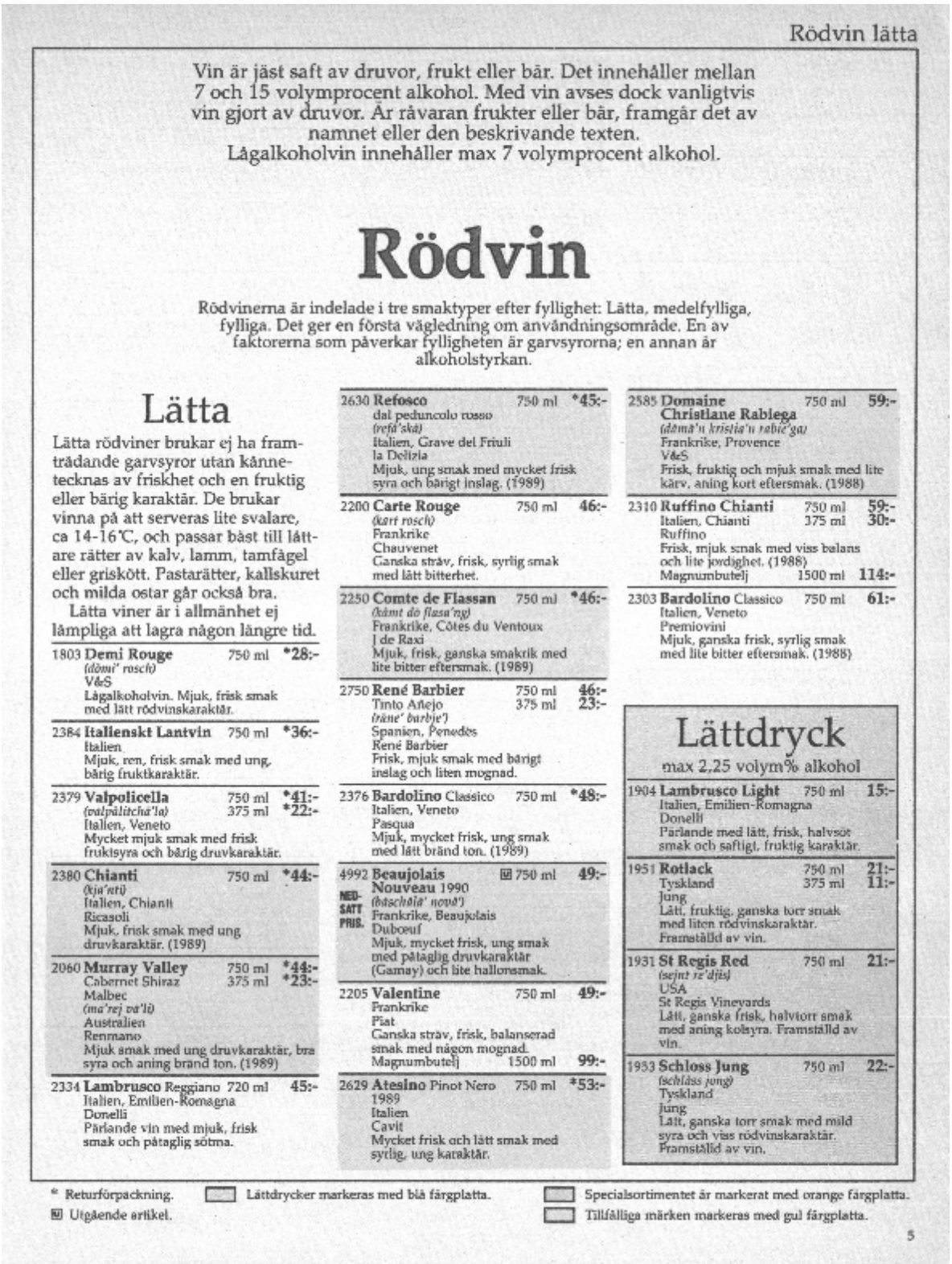
Dependent variable is Herfindahl (products, units sold).
Regressions include store-category fixed effects (differenced out) and 107 monthly fixed effects.
Robust standard errors clustered by store in parentheses.
Each regression includes 1510 observations and 14 store-category groups.
* significant at 5%; ** significant at 1

Table 5: Format change and percentage of sales by quintile

| Dependent variable → | (1) Percentage of sales in top quintile | (2) Percentage of sales in second highest quintile | (3) Percentage of sales in middle quintile | (4) Percentage of sales in second lowest quintile | (5) Percentage of sales in bottom quintile |
|---|---|---|---|---|---|
| Self serve stores after change | -0.0373 (0.0048)** | 0.0124 (0.0021)** | 0.0134 (0.0020)** | 0.0093 (0.0019)** | 0.0023 (0.0007)** |
| $R^2$ | 0.07 | 0.05 | 0.06 | 0.07 | 0.07 |
| Avg. Value in Jan. 1991 | 0.746 | 0.155 | 0.070 | 0.025 | 0.004 |

Regressions include store-category fixed effects (differenced out) and 107 monthly fixed effects.
Robust standard errors clustered by store in parentheses.
Each regression has 10570 observations and 98 store-category groups.
* significant at 5%; ** significant at 1%

Figure 1a: Sample page from a typical menu, covering red wines (from January 1991) ©Systembolaget. Reprinted with permission.





Vin är jäst saft av druvor, frukt eller bär. Det innehåller mellan 7 och 15 volymprocent alkohol. Med vin avses dock vanligtvis vin gjort av druvor. Är råvaran frukter eller bär, framgår det av namnet eller den beskrivande texten.
Lågalkoholvin innehåller max 7 volymprocent alkohol.

# Rödvin

Rödvinerna är indelade i tre smaktyper efter fyllighet: Lätta, medelfylliga, fylliga. Det ger en första vägledning om användningsområde. En av faktorerna som påverkar fylligheten är garvsyrorna; en annan är alkoholstyrkan.

## Lätta

Lätta rödviner brukar ej ha framträdande garvsyror utan kännetecknas av friskhet och en fruktig eller bärig karaktär. De brukar vinna på att serveras lite svalare, ca 14-16°C, och passar bäst till lättare rätter av kalv, lamm, tamfågel eller griskött. Pastarätter, kallskuret och milda ostar går också bra.

Lätta viner är i allmänhet ej lämpliga att lagra någon längre tid.

1803 **Demi Rouge** 750 ml *28:-
*(dömi' rosch)*
V&S
Lågalkoholvin. Mjuk, frisk smak med lätt rödvinskaraktär.

2384 **Italienskt Lantvin** 750 ml *36:-
Italien
Mjuk, ren, frisk smak med ung, bärig fruktkaraktär.

2379 **Valpolicella** 750 ml *41:-
*(valpålitchä'la)* 375 ml *22:-
Italien, Veneto
Mycket mjuk smak med frisk fruktsyra och bärig druvkaraktär.

2380 **Chianti** 750 ml *44:-
*(kja'ati)*
Italien, Chianti
Ricasoli
Mjuk, frisk smak med ung druvkaraktär. (1989)

2060 **Murray Valley** 750 ml *44:-
Cabernet Shiraz 375 ml *23:-
Malbec
*(ma'rej va'li)*
Australien
Renmano
Mjuk smak med ung druvkaraktär, bra syra och aning bränd ton. (1989)

2334 **Lambrusco** Reggiano 720 ml 45:-
Italien, Emilien-Romagna
Donelli
Pärlande vin med mjuk, frisk smak och påtaglig sötma.

2630 **Refosco** 750 ml *45:-
dal peduncolo rosso
*(refå'skå)*
Italien, Grave del Friuli
la Delizia
Mjuk, ung smak med mycket frisk syra och bärigt inslag. (1989)

2200 **Carte Rouge** 750 ml 46:-
*(kart rosch)*
Frankrike
Chauvenet
Ganska strav, frisk, syrlig smak med lätt bitterhet.

2250 **Comte de Flassan** 750 ml *46:-
*(kåmt dö flasa'ng)*
Frankrike, Côtes du Ventoux
J de Raxi
Mjuk, frisk, ganska smakrik med lite bitter eftersmak. (1989)

2750 **René Barbier** 750 ml 46:-
Tinto Añejo 375 ml 23:-
*(tiine' barbje')*
Spanien, Penedès
René Barbier
Frisk, mjuk smak med bärigt inslag och liten mognad.

2376 **Bardolino** Classico 750 ml *48:-
Italien, Veneto
Pasqua
Mjuk, mycket frisk, ung smak med lätt bränd ton. (1989)

4992 **Beaujolais Nouveau** 1990 ⊠ 750 ml 49:-
NEDSATT PRIS.
*(bôschôlä' novå')*
Frankrike, Beaujolais
Duboeuf
Mjuk, mycket frisk, ung smak med påtaglig druvkaraktär (Gamay) och lite hallonsmak.

2205 **Valentine** 750 ml 49:-
Frankrike
Piat
Ganska strav, frisk, balanserad smak med någon mognad.
Magnumbutelj 1500 ml 99:-

2629 **Atesino** Pinot Nero 750 ml *53:-
1989
Italien
Cavit
Mycket frisk och lätt smak med syrlig, ung karaktär.

2585 **Domaine Christiane Rablega** 750 ml 59:-
*(dåmä'n kristia'n rablé'ga)*
Frankrike, Provence
V&S
Frisk, fruktig och mjuk smak med lite kärv, aning kort eftersmak. (1988)

2310 **Ruffino Chianti** 750 ml 59:-
Italien, Chianti 375 ml 30:-
Ruffino
Frisk, mjuk smak med viss balans och lite jordighet. (1988)
Magnumbutelj 1500 ml 114:-

2303 **Bardolino** Classico 750 ml 61:-
Italien, Veneto
Premiovini
Mjuk, ganska frisk, syrlig smak med lite bitter eftersmak. (1988)

## Lättdryck

max 2,25 volym% alkohol

1904 **Lambrusco Light** 750 ml 15:-
Italien, Emilien-Romagna
Donelli
Pärlande med lätt, frisk, halvsot smak och saftigt, fruktig karaktär.

1951 **Rotlack** 750 ml 21:-
Tyskland 375 ml 11:-
Jung
Lätt, fruktig, ganska torr smak med liten rödvinskaraktär.
Framställd av vin.

1931 **St Regis Red** 750 ml 21:-
*(sejnt re'djis)*
USA
St Regis Vineyards
Lätt, ganska frisk, halvtorr smak med aning kolsyra. Framställd av vin.

1933 **Schloss Jung** 750 ml 22:-
*(schlåss jung)*
Tyskland
Jung
Lätt, ganska torr smak med mild syra och viss rödvinskaraktär.
Framställd av vin.

* Returförpackning.
⊠ Utgående artikel.
Lättdrycker markeras med blå färgplatta.
Specialsortimentet är markerat med orange färgplatta.
Tillfälliga märken markeras med gul färgplatta.

5

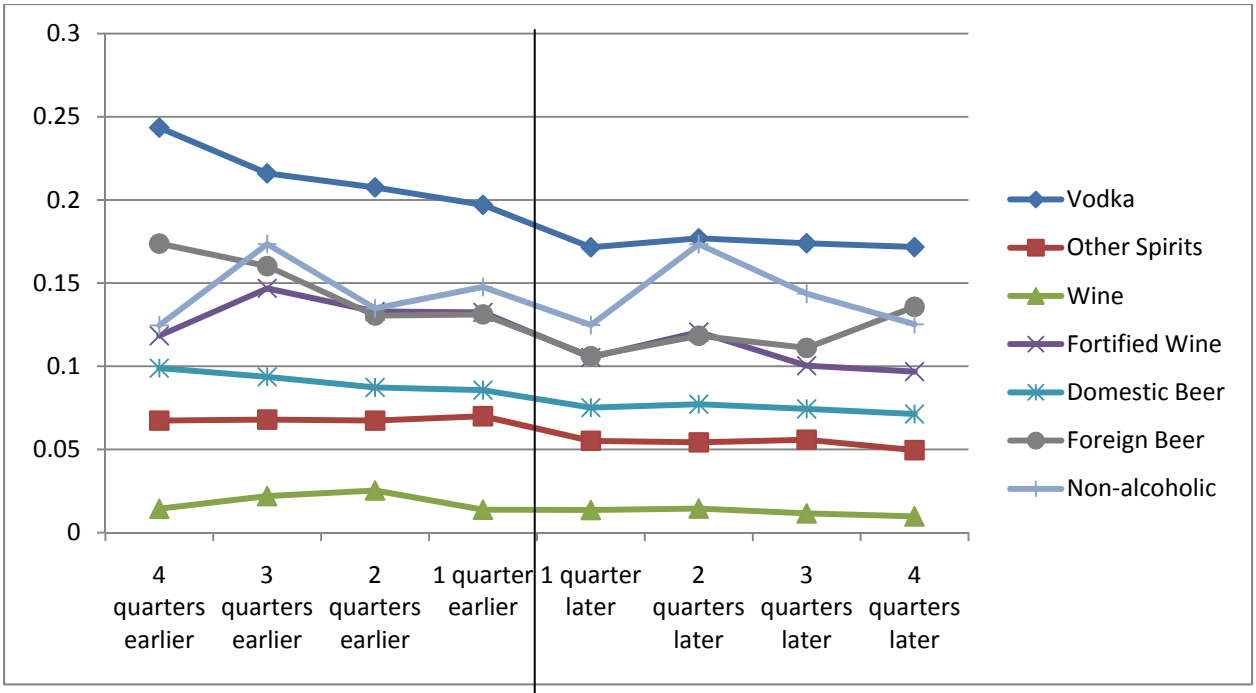
Figure 1b: Picture of a store with behind-the-counter service

(source: Wikipedia/copyright Christan Koehn 2006, used under GNU Free Documentation License)


Figure 1c: Picture of a store after the change (source: Wikipedia/public domain)

Figure 2: Herfindahl by category-quarter

TREATMENT GROUP




CONTROL GROUP

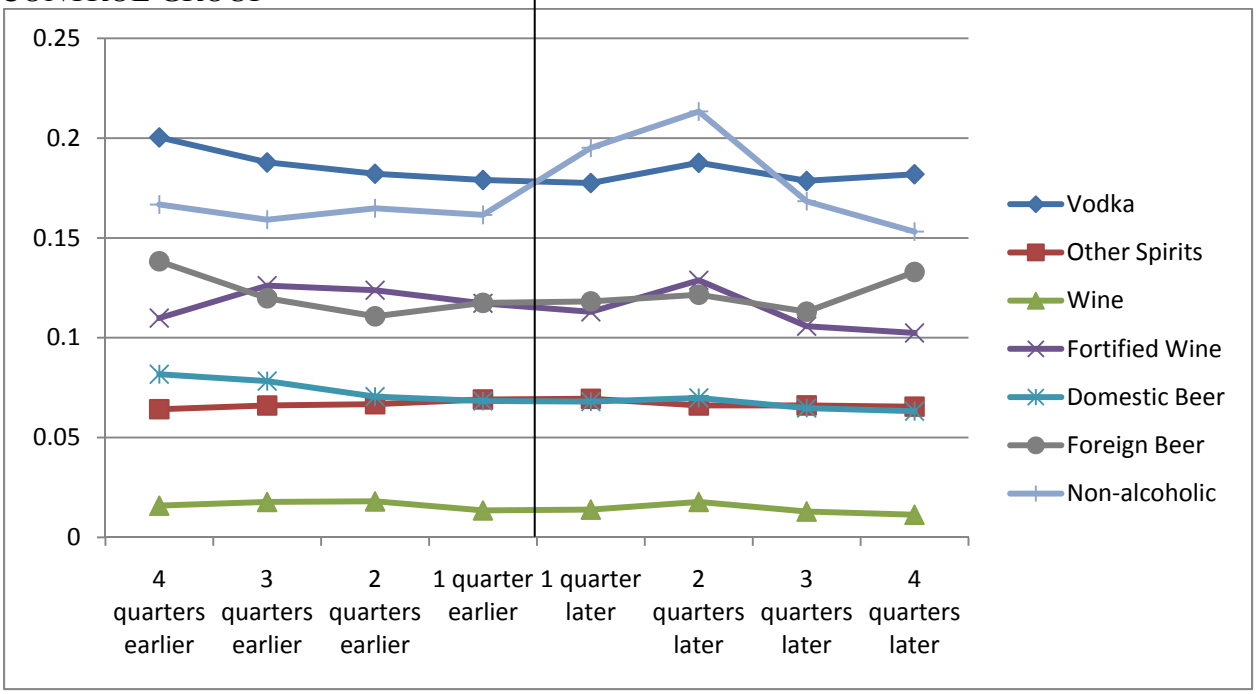
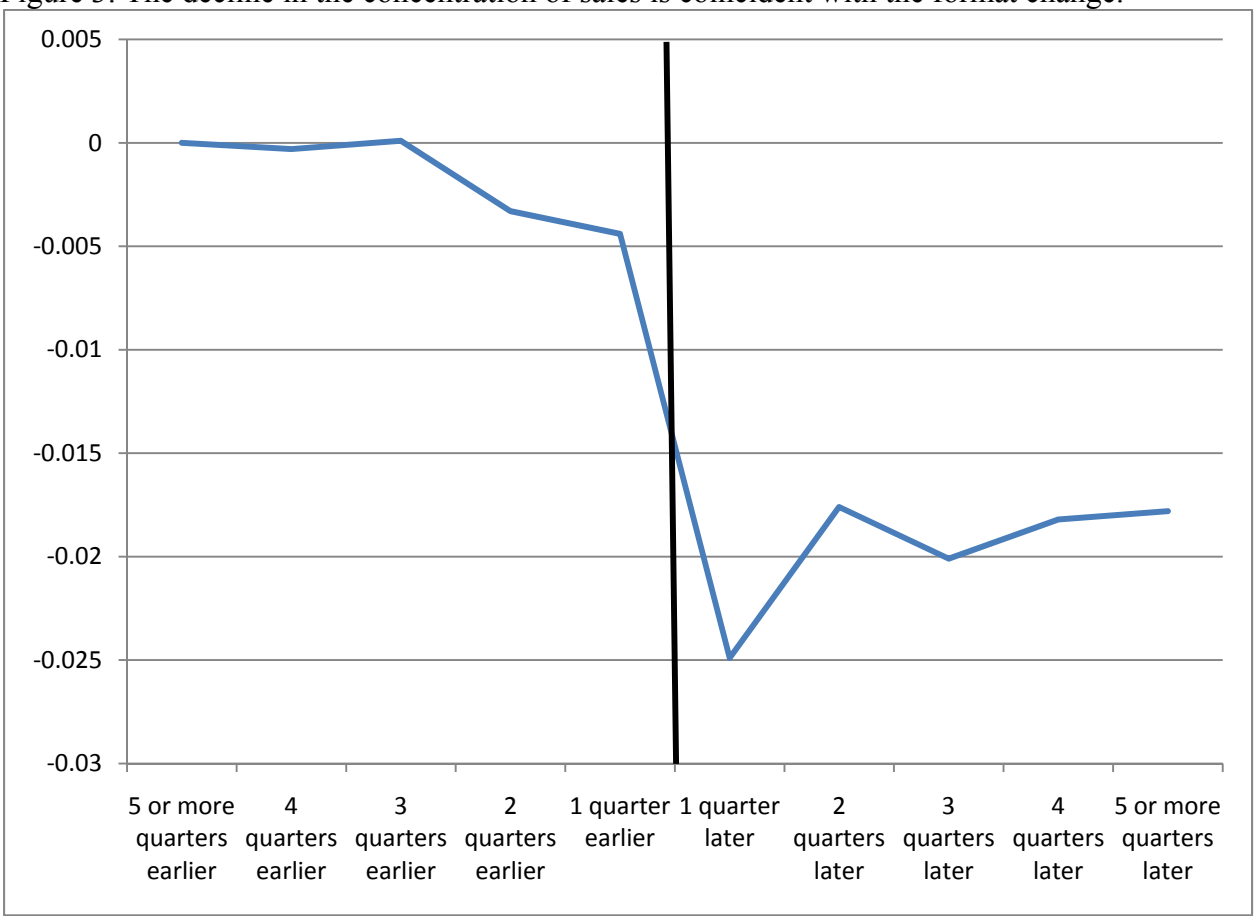


Figure 3: The decline in the concentration of sales is coincident with the format change.




Coefficient on being in the treatment group over time (Herfindahl)-based on all data. See the appendix for coefficient estimates, standard errors, and regression details.

Figure 4: New products launched after format change do better in self-service stores.


Sales of new products in the self-service stores are 51% higher in terms of units and 45% in terms of volume.

ONLINE APPENDIX TO

# RETAIL FORMAT AS A BARRIER TO ENTRY

NOT FOR PUBLICATION

Appendix Table 1: Quarter-by-quarter effects (column 1 generates Figure 3)

| | (1) Herfindahl (products, units sold) | (2) Herfindahl (products, mL sold) | (3) C4 (SKUs, units sold) | (4) Log sales in units |
|---|---|---|---|---|
| 4 quarters earlier | -0.0003 | 0.0032 | -0.0048 | -0.0737 |
| | (0.0030) | (0.0036) | (0.0052) | (0.0496) |
| 3 quarters earlier | 0.0001 | 0.0020 | 0.0051 | -0.0777 |
| | (0.0026) | (0.0026) | (0.0052) | (0.0565) |
| 2 quarters earlier | -0.0033 | -0.0007 | 0.0040 | -0.0857 |
| | (0.0031) | (0.0029) | (0.0059) | (0.0523) |
| 1 quarter earlier | -0.0044 | -0.0040 | 0.0004 | -0.0711 |
| | (0.0039) | (0.0045) | (0.0057) | (0.0718) |
| 1 quarter later (starts with first month of change) | -0.0249 (0.0027)** | -0.0228 (0.0044)** | -0.0577 (0.0055)** | 0.1529 (0.0314)** |
| 2 quarters later | -0.0176 | -0.0171 | -0.0564 | 0.1775 |
| | (0.0035)** | (0.0055)** | (0.0057)** | (0.0396)** |
| 3 quarters later | -0.0201 | -0.0193 | -0.0494 | 0.1745 |
| | (0.0041)** | (0.0038)** | (0.0053)** | (0.0314)** |
| 4 quarters later | -0.0182 | -0.0153 | -0.0482 | 0.1906 |
| | (0.0037)** | (0.0037)** | (0.0066)** | (0.0349)** |
| 5 or more quarters later | -0.0178 | -0.0162 | -0.0390 | 0.2205 |
| | (0.0036)** | (0.0035)** | (0.0043)** | (0.0322)** |
| $R^2$ | 0.18 | 0.18 | 0.32 | 0.40 |

Regressions include store-category fixed effects (differenced out) and 107 monthly fixed effects.
Robust standard errors clustered by store in parentheses.
Base is 5 or more quarters earlier.
Each regression has 10570 observations and 98 store-category groups.
* significant at 5%; ** significant at 1%