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Effects of opening and closing stores on chain retailer performance[☆]

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Abstract

Chain retailers continually open stores and close stores to improve their performance. Yet, there are few insights on the effects of store openings and closings on chain retailer performance. The authors examine the effect of changes in opening and closing stores on retailers' performance. They hypothesize that a chain retailer's market share, advertising intensity, age, and size moderate the effects of opening and closing stores on firm value. They test and find support for the contingent effects of opening and closing stores on firm value using a panel of 1,447 retailer-years of 132 publicly listed US chain retailers from 1998 to 2009. By relating chain retailers' store openings and closings to their performance, using a contingent framework, the findings extend the marketing literature, which has hitherto not examined the effects of changes in distribution strategy on shareholder value. Insights on the performance implications of opening and closing stores are also useful to chain retailers to achieve superior performance.

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Keywords: Retailers; Opening stores; Closing stores; Retailer performance

A key aspect of a chain retailer's marketing strategy is the number of stores that the retailer operates to reach its consumers. Chain retailers manage the number of stores by opening new stores and closing some of their existing stores.⁵ However, opening stores has different strategic implications (e.g., revenue expansion and entering markets) from closing stores (e.g., cost reduction and exiting markets), on a retailer's performance (Hanner et al. 2011).

From a theoretical perspective, a study relating a chain retailer's opening and closing of stores to its performance has the potential to extend the extant literature (e.g., Pancras, Sriram

and Kumar 2012). Empirical evidence on the effects of number of stores on performance exists primarily at the product-level (increases in a product's distribution coverage increases market share) (Reibstein and Farris 1995) or at the consumer-level (increases in the consumers' perceptions of a product's distribution depth increases product demand) (Bucklin, Siddarth, and Silva-Risso 2008). To the best of our knowledge, past research has not examined the implications of opening and closing stores on firm-level performance of chain retailers, the issue we focus on in this paper.

The effect of opening and closing stores on the chain retailer's performance is managerially important. A key mechanism by which chain retailers cope with changing market trends is by opening new stores, closing some existing stores, or both endeavors (Baum, Li, and Usher 2000; Hanner et al. 2011). Store openings and closings form a vast majority of retail expansion and contraction activity (Hanner et al. 2011). Opening new stores is an externally focused initiative emphasizing revenue expansion, with the expectation that revenues from the new stores will exceed related costs, thus improving net performance. Closing stores is a cost focused initiative, with the expectation that the cost reductions in question will exceed loss in revenues, again improving net performance. Thus, insights on the contingent effects of opening and closing stores on the retailer's

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⁵ We use the terms 'chain retailer', 'retailer,' and 'firm' interchangeably to denote a chain retailer in this paper.

performance will be useful to senior executives in the retailing industry.

We address two research questions in this paper: What are the performance implications of changes in opening and closing stores for chain retailers? What chain retailer characteristics moderate the effects of opening and closing stores on their performance? We measure firm performance by firm value, a forward looking shareholder value-based metric.

Opening stores and closing stores are characterized by multiple and, sometimes, opposing mechanisms which affect the chain retailer's performance. Thus, we propose that which effect dominates is contingent on the retailer's characteristics. Extending developments in the marketing and organizational ecology literatures, we propose that the chain retailer's scope (i.e., market share), differentiation emphasis (i.e., advertising intensity), and demographics (age and size) will influence the effects of opening and closing stores on firm value.

We test the hypotheses using annual data on 132 publicly listed U.S. chain retailers between 1998 and 2009 (1,447 retailer-years). The results indicate that as the chain retailer's market share increases, opening stores decreases firm value, while closing stores increases firm value. A similar pattern exists for advertising intensity. We find no effect of the chain retailer's age on the relationship between opening stores and firm value. However, we find that as the chain retailer's age increases, closing stores increases firm value. Finally, as the chain retailer's size increases, both opening and closing stores decrease firm value.

We use the model estimates to compute chain retailer-specific marginal effects of opening and closing stores on firm value. We decompose the marginal effect for each chain retailer into an industry-specific component common to all chain retailers (akin to an intercept), and a chain retailer-specific component, the contingent marginal effect (CME) arising from the interaction effects of chain retailer characteristics. The CME and its statistical significance (negative, positive, or not different from zero) indicate whether a chain retailer obtains less than, the same, or more rewards from opening and closing stores than the average of all chain retailers in its industry.

A key insight from the CME analysis is that most chain retailers are unable to simultaneously and effectively (from a shareholder value perspective) execute decisions to open and close stores. For example, in 523 firm-year instances (36%) chain retailers receive positive CMEs from closing stores, but extract zero CMEs from opening stores. Thus, effectively managing both store openings and closings from a stock valuation perspective appears to be a challenge for chain retailers. Using our approach, managers can estimate the effects of their and competitors' opening and closing stores on their performance to effectively manage the opening and closing of stores.

The study's findings extend the marketing literature. The findings suggest that chain retailers' opening and closing stores have contingent effects on firm value. Chain retailer characteristics have either symmetric (e.g., size) or asymmetric (e.g., market share) effects on the impact of opening and closing stores on firm value. The heterogeneity across chain retailers in the performance effects of opening and closing stores over time, stresses synergies and conflicts between aspects of chain retailers'

channel decisions and firm characteristics, extending the marketing literature which has not examined the shareholder value implications of changes in distribution strategies.

The rest of the paper is organized as follows. We first develop the theory and hypotheses. We then present the data, measures, and approach used to test the hypotheses. Following that, we present the results from the CME analysis. We conclude by discussing the paper's contributions to marketing theory, implications for managerial practice, and by identifying the paper's limitations and opportunities for future research.

Theory and hypotheses

Independently, store openings and store closings of chain retailers have multiple (may be even opposing) effects on firm performance. For example, a chain retailer may open stores to exploit opportunities in a market, which will have a positive effect on performance, while, the closing of stores may cut back on its costs and losses, which will also have a positive effect on performance. Thus, opening and closing of stores, on their own, may not hold "value relevance" for investors and therefore, do not hypothesize main effects of opening and closing stores on firm value. However, in conjunction with other firm characteristics (e.g., age, market share) the openings and closing of stores by chain retailers acquire "value relevance" for investors.

We broadly propose that three chain retailer characteristics (scope, differentiation strategy, and firm demographics) will moderate the effects of opening and closing stores on chain retailer performance. We hypothesize that the effects of the chain retailer's opening and closing stores on firm value are moderated by its market share which influences its market scope (Buzzell, Gale, and Sultan 1975), advertising intensity, an indicator of its differentiation strategy (McAlister et al. 2012), and age and size, key firm demographic characteristics with implications for performance (Carroll and Hannan 2004; Klepper and Thompson 2006; Kosova and Lafontaine 2010). In Fig. 1, we provide the conceptual framework. A priori, we do not hypothesize main effects of chain retailers' opening and closing stores on firm value, but we include them in the empirical model for completeness.

Market share

We define a chain retailer's market share as the extent of the chain retailer's sales relative to the sales of all chain retailers in its industry. By definition, chain retailers with high market share have high consumer awareness and market penetration and serve a large proportion of the market's consumers (Bloom and Kotler 1975). Hence, such chain retailers will generally have consumers with heterogeneous preferences, some of whom will be price sensitive. Thus, as a chain retailer with large market share opens more stores, it is likely to expand its store base to even more heterogeneous and price-sensitive customers (Hellofs and Jacobson 1999). This may raise investors' concerns regarding the retailer's profitability as more price-sensitive customers may generate less profit, which then decreases cash flow streams and firm value.

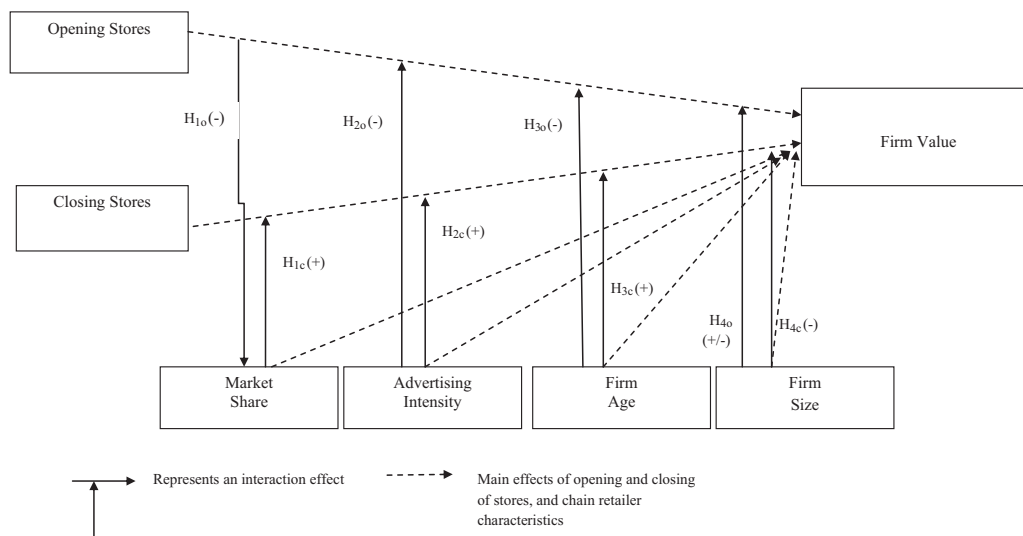


Fig. 1. Conceptual framework relating opening and closing of stores to retailer firm value.

However, when high market share chain retailers close stores, they are able to trim those locations which may be unprofitable and eliminate those consumers who are not well-aligned with its offerings in terms of assortments and prices. This suggests that even if the chain retailer’s revenues decrease as a result of the closing of these stores, its profitability and future cash flows will increase.

In addition, when a chain retailer with high market share closes stores, the stock market (i.e., investors and analysts) may infer that such store closings would reduce the cannibalization across its stores, which should, ceteris paribus, increase performance and expectations of future cash flows, enhancing firm value. Combining the discussion on the effects of the chain retailer’s market share on opening and closing stores, we propose H_{10} and H_{1c} :

H_{10} . The higher the chain retailer’s market share and the higher the number of stores opened, the lower the firm value.

H_{1c} . The higher the chain retailer’s market share and the higher the number of stores closed, the higher the firm value.

Advertising intensity

Advertising helps a chain retailer implement a differentiation strategy to build brand equity and price premiums (McAlister et al. 2012). Spillover effects result from brand awareness and brand quality perceptions, created from advertising, and cause greater investment in the stocks of well-advertised firms (Grullon, Kanatas, and Weston 2004).

A chain retailer with high advertising intensity uses a differentiation strategy, which results in high brand equity and allows the retailer to earn high price premiums (Aaker 1991). Therefore, when a chain retailer with high advertising intensity opens stores, the stock market may perceive the retailer’s brand image to be diluted across a greater number of stores and negatively affect its ability to command higher prices across this larger number of stores. Indeed, many chain retailers actually maintain

their premium image by limiting the numbers of brick and mortar store locations (Pomerantz 2012). Therefore, when chain retailers with high advertising intensity open new stores, investors’ concerns of diminished brand equity may lead to expectations of lower levels and speed of retailers’ future cash flows (Srivastava, Shervani, and Fahey 1998), thereby lowering firm value.

We anticipate a positive interaction effect between the chain retailer’s advertising intensity and closing stores on firm value. Increased advertising intensity may induce a positive effect of closing stores on firm value because of signaling and spillover effects of advertising (Joshi and Hanssens 2009). As spending on advertising is discretionary, high advertising intensity indicates the financial well-being of these chain retailers to investors (Simpson 2008).

Thus, when a chain retailer with higher advertising intensity closes its stores, it is possible that its premium brand image will likely be strengthened over the fewer number of its stores, increasing the efficacy of its advertising intensity. Closing stores may signal (to the investor market) that the chain retailer is now focused on its core customers, which for a firm with a differentiation strategy (see rationale for opening stores), suggests superior price premiums, margins, and firm value. Hence, in such a situation, the stock market may infer that the retailer’s actions of closing stores will improve the level and speed of its future cash flows increasing firm value. Thus, we propose H_{20} and H_{2c} :

H_{20} . The higher the chain retailer’s advertising intensity and the higher the number of stores opened, the lower the firm value.

H_{2c} . The higher the chain retailer’s advertising intensity and the higher the number of stores closed, the higher the firm value.

Age

Older firms have high investments in existing organizational structures and routines and are prone to inertia (Carroll and Hannan 2004; Hannan and Freeman 1984) which, ceteris paribus, diminish their ability to adapt to change. Older

firms also have lower growth rates in operations (Kosova and Lafontaine 2010), while younger firms prevail by focusing on improved productivity (Klepper and Thompson 2006).

Extending these ideas to chain retailers suggests that older retailers they are likely to be less effective at change-inducing activities such as launching and managing new stores. In addition, the older the chain retailer, the more likely it is that it has already reached its steady state (i.e., saturation) in revenues and profits. Additional geographical expansion may, therefore, not give it the desired net increase in profits for additional investments in these stores. Thus, the stock market may be uncertain about the ability of older chain retailers to profitably extract additional rents from the new stores. Thus, overall, for older chain retailers, the stock market may anticipate not only reduced net cash flows from their new store openings, but also increased uncertainty about the stream of future cash flows, both of which will decrease firm value.

With respect to closing stores by older chain retailers, we anticipate the opposite effect. Stock market participants not only value higher levels, but also typically value stability or smoothness in cash flows (e.g., Rountree, Weston, and Allayannis 2008). Therefore, when an older chain retailer closes stores, the stock market may view this as a “back to basics” move on the part of the older chain retailer, that is, an effort to downsize operations so it can focus on its core business. The stock market may interpret such a move by older chain retailers, as a positive move, with the potential to generate both high and steady cash flows, which should increase firm value. Integrating the above arguments, we offer H_{30} and H_{3c} :

H_{30} . The higher the chain retailer's age and the higher the number of stores opened, the lower the firm value.

H_{3c} . The higher the chain retailer's age and the higher the number of stores closed, the higher the firm value.

Size

With large firms, extant theory predicts opposing effects for opening stores, as we next discuss. As with older firms, larger firms also have high investments in existing organizational structures and routines and may be prone to inertia (Carroll and Hannan 2004; Hannan and Freeman 1984) which, ceteris paribus diminish their ability to adapt to change. Further, large firms also possess limited growth potential (Klepper and Thompson 2006).

Specifically, in the retail context, the large stock of employees, the change in organizational routines, and capital investments, necessary to facilitate the opening of stores, may be perceived by the stock market to be a liability for larger chain retailers who may be less suited for strategic change. When a large chain retailer opens new stores, the stock market may decrease its expectations of the level and speed of future cash flows decreasing firm value.

However, other arguments suggest the opposite effect of opening stores for large chain retailers (i.e., that their firm value may increase as a result). Large firms may have the financial and human resources and well-established organizational routines, which they can extend to the new stores profitably (Foster,

Haltiwanger, and Krizan 2006). Hence, it is possible that the stock market may view that when large chain retailers open stores, the levels and speed of their cash flows may increase, increasing firm value.

With respect to closing stores by large chain retailers, stock market participants may infer that the closing of stores by them is due to the structural inertia created by the large stock of their employees and existing organizational routines. Thus, closing stores may be perceived by the stock market as a liability, which should decrease the stock market's expectations of both the level and the speed of the stream of the firm's future cash flows, decreasing firm value. Given these arguments, we propose $H_{40/40'}$ and H_{4c} :

$H_{40/40'}$. The higher the chain retailer's size and the number of stores opened, the lower (higher) the firm value.

H_{4c} . The higher the chain retailer's size and the higher the number of stores closed, the lower the firm value.

Method

Empirical context

We test the hypotheses in the U.S. retail industry setting, where chain retailers routinely open and close stores, presumably to improve their performance. We collected data from multiple sources to develop the dataset to test the hypotheses. We obtained data from 1998 to 2009 on opening and closings of stores of U.S. chain retailers from the Standard and Poor's Compustat Retail Industry-Specific Database. We obtained data on other chain retailer characteristics (e.g., market share, advertising intensity, age and size) and firm value from the Standard & Poor's Compustat database.

Measures

Dependent variable

We use the chain retailer's market-to-book value as measure of the firm's value (FV). Market-to-book value (Chan and Chen 1991; Fama and French 1995) is an important variable predicting stock returns of firms (Jensen, Johnson, and Mercer 1997). For a review of a list of studies that demonstrate the importance of price-to-book value for predicting stock returns, see Jensen, Johnson, and Mercer (1997, p. 35, Footnote 1). We measure the firm's market to book value as the ratio of the firm's market capitalization (i.e., number of shares outstanding \times stock price at end of the fiscal year-end) divided by the book value of the total assets. We subsequently examine the robustness of the results to the firm's systematic risk (McAlister, Srinivasan, and Kim 2007).

Independent variables

We operationalize opening and closing stores as the percentage of total stores opened and closed respectively by the chain retailer in the current year. We use the percentage measure because it is scaled across chain retailers.

We measure the chain retailer’s market share (*MKTSH*) at the industry level, defined by the four-digit SIC code. Specifically, the market share variable was computed as the fraction of sales the firm had relative to all firms in the four-digit SIC code for the specific year.

We measure advertising intensity (*ADV*) using the chain retailer’s three year advertising stock (scaled by sales). Following Hirschey and Weygandt (1985), we used an amortization rate of 40%.

We measure the chain retailer’s age (*AGE*) as the number of years since its incorporation and we measure the chain retailer’s size (*SIZE*) as the number of its employees (Chandy and Tellis 2000).

Control variables

We include several control variables in the model used for hypotheses testing. First, we include environmental uncertainty (*UNCERT*) as a control variable. Environmental uncertainty reflects the volatility in the net sales of firm’s portfolio of four-digit SIC industries (Bergh and Lawless 1998; Dess and Beard 1984). In order to calculate the measure of environmental uncertainty, a variable for each year was regressed on net industry sales (Keats and Hitt 1988). We used three year sales in the analysis. In line with past work, the measure of volatility was the standard error of the regression divided by mean industry sales for the three years. We controlled for concentration (*CONC*) in the firm’s industry (as indicated by the four-digit SIC code) as the four-firm concentration ratio of the sales of the four largest firms scaled by the combined sales of all firms (Harris 1998). Specifically, the Herfindahl’s industry concentration index = $\sum_i^4 s_{ij}^2$ where s_{ij}^2 is the ratio of the firm *i*’s sales to the total sales of industry *j* in which firm *i* is a member (Hou and Robinson 2006).

Next, to control for heterogeneity in the size of stores opened or closed across chain retailers, we used the data on size of the total retail square footage per store from Compustat. We note that data on the size of every store opened or closed in a given year

is not available in any public database. Accordingly, we include this measure as a control variable (*STORE_SIZE*) to account for store size heterogeneity in store opening and closings.

Finally, the time period of the sample (1998–2009) coincides with the rise of Internet retailing. To control for the notion that Internet retailing could affect the performance of bricks-and-mortar stores, we include a variable that captures the percentage of the total retail revenue arising from the Internet (*ETAILPER*). This data was obtained from the Annual Retail Trade Survey performed by the *U.S Census Bureau*.

In obtaining the final sample, we encountered missing data across all measures. While missing data are never ideal, this is a common problem in empirical research using Compustat data. We dropped firms that did not have data on either the dependent variable or any of the independent variable for all years. Across all the key measures (i.e., dependent and independent variables), we encountered 11% missing data. To deal with missing data, we use a Bayesian estimation approach, which treats missing data as additional unknown quantities for which a posterior distribution can be estimated, concurrently with the parameter estimates of interest.

Data description and preliminary analysis

Our final sample featured 1,447 observations in an unbalanced sample, representing 132 firms across 12 years (1998–2009). We provide the moments and the correlation between the measures in Table 1. The low correlations among the different measures alleviate concerns about potential multicollinearity. In addition, the low correlation between opening and closing stores is .02 reiterates the distinctiveness of opening and closing stores.

We provide some primitives of the data in Fig. 2. In Fig. 2, Panel A, we plot the opening and closing store measures over time. The chain retailers in the sample generally appear to open more stores than they close, with the ratio of the percentage of stores opened to those closed ranging from 2.62 (2007) to 8.22

Table 1
Descriptive statistics.

| # | Variable | Mean | Std. dev. | Correlations | | | | | | | | | | | |
|----|--|-------|-----------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|--|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
| 1 | Firm Value (FV) | 1.29 | 1.79 | 1.00 | | | | | | | | | | | |
| 2 | Opening Stores (OPEN) | 0.14 | 0.42 | 0.11 | 1.00 | | | | | | | | | | |
| 3 | Closing Stores (CLOSE) | 0.03 | 0.06 | -0.16 | 0.02 | 1.00 | | | | | | | | | |
| 4 | Market share (MKTSH) | 0.10 | 0.16 | 0.04 | -0.02 | -0.03 | 1.00 | | | | | | | | |
| 5 | Advertising intensity (ADV) | 36.11 | 89.02 | -0.05 | -0.07 | 0.02 | 0.48 | 1.00 | | | | | | | |
| 6 | Age (AGE) | 44.22 | 30.35 | -0.03 | -0.07 | -0.08 | 0.05 | 0.20 | 1.00 | | | | | | |
| 7 | Size (SIZE) | 40.24 | 160.48 | 0.08 | -0.02 | -0.06 | 0.43 | 0.63 | 0.07 | 1.00 | | | | | |
| 8 | Environmental Uncertainty (UNCERT) | 0.06 | 0.09 | -0.06 | 0.12 | 0.08 | -0.08 | -0.06 | -0.13 | -0.06 | 1.00 | | | | |
| 9 | Concentration Ratio (CONC) | 0.36 | 0.12 | -0.04 | -0.02 | 0.00 | 0.29 | 0.08 | -0.20 | 0.14 | -0.01 | 1.00 | | | |
| 10 | Firm Average Store Size (STORE_SIZE) | 27.02 | 39.13 | -0.18 | -0.10 | -0.06 | 0.14 | 0.52 | 0.30 | 0.37 | 0.01 | -0.05 | 1.00 | | |
| 11 | Percentage Retail Revenue from Online Retailing (ETAILPER) | 1.92 | 1.16 | -0.06 | -0.04 | -0.05 | 0.11 | 0.10 | 0.10 | 0.05 | -0.07 | 0.02 | -0.04 | 1.00 | |

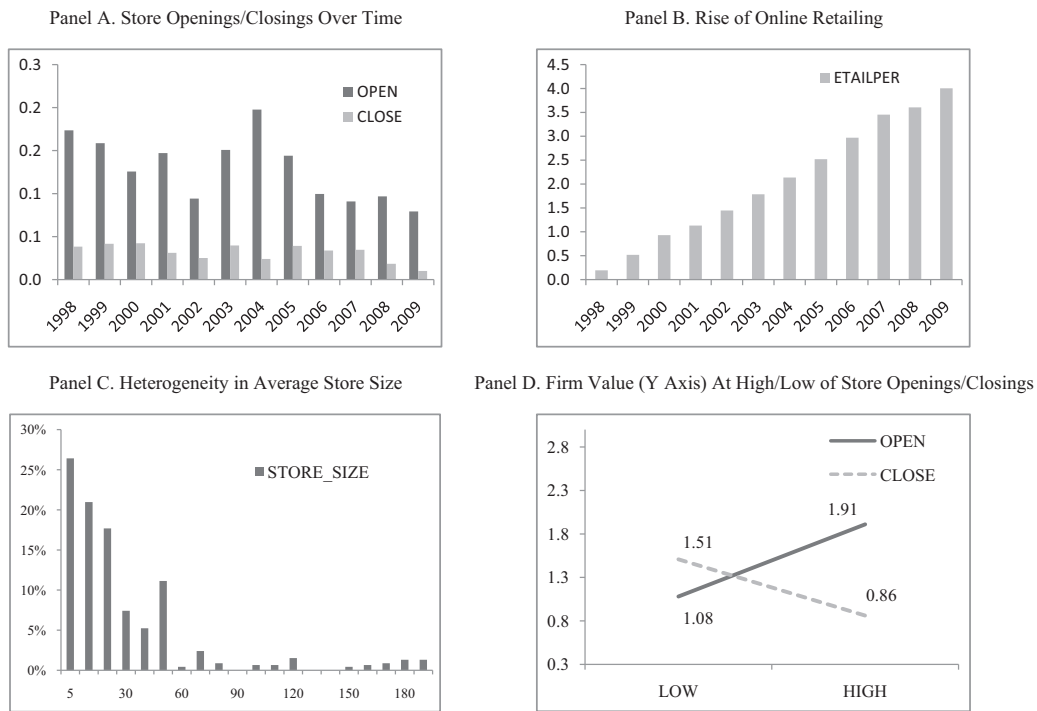


Fig. 2. Data primitives.

(2004). Also, there appears to be no systematic increase/decrease in store openings/closings over time. In Fig. 2, Panel B, we plot the percentage of the total retail revenue came from online shopping (*ETAILPER*), which as surmised, shows a marked increase over time. In Fig. 2, Panel C, we plot the histogram of chain retailer's average store size. The histograms suggest significant heterogeneity in store size across chain retailers, which we need to control for. In Fig. 2, Panel D, we plot the mean firm value at low and high levels of store openings and closings respectively. As intuition would suggest, we find that average firm value is higher when stores openings are high (1.91) than when stores openings are low (1.08). Also, not surprisingly, we find that that average firm value is lower when stores closings are low (1.51) than when stores closings are high (0.86). However, this model-free evidence is confounded by several factors such as the chain retailers' characteristics and unobserved heterogeneity. Hence, we investigate the effect of opening and closing stores more formally with the model we describe next.

Finally, we assess whether firm value represents a stationary time series to determine whether we need a model in levels or differences. We employ the Choi (2001) panel-stationarity test, a flexible test that works for unbalanced panels (Hoffmann et al. 2005), to firm value. Our results (not reported here in the interest of brevity) indicated that firm value is stationary, following which we specify a model in levels of the variables.

Model specification and estimation

We begin with a parsimonious model specification that captures the main effects of opening and closing stores on firm value and the interaction effects between chain retailer characteristics and opening and closing stores on firm value. For firm i in time

period t , we specify:

$$\begin{aligned}
 FV_{it} = & \beta_0 + \beta_1 OPEN_{it} + \beta_2 CLOSE_{it} + \beta_3 MKTSH_{it} \\
 & + \beta_4 ADV_{it} + \beta_5 AGE_{it} + \beta_6 SIZE_{it} + \beta_7 OPEN_{it} \\
 & \times MKTSH_{it} + \beta_8 CLOSE_{it} \times MKTSH_{it} + \beta_9 OPEN_{it} \\
 & \times ADV_{it} + \beta_{10} CLOSE_{it} \times ADV_{it} + \beta_{11} OPEN_{it} \\
 & \times AGE_{it} + \beta_{12} CLOSE_{it} \times AGE_{it} + \beta_{13} OPEN_{it} \\
 & \times SIZE_{it} + \beta_{14} CLOSE_{it} \times SIZE_{it} + \boldsymbol{\gamma} \mathbf{Z}_{it} + \varepsilon_{it}, \quad (1)
 \end{aligned}$$

In Eq. (1), β_0 denotes the intercept, β_1 and β_2 capture the main effects of opening and closing stores respectively, and β_3 – β_6 capture the main effects of market share, advertising intensity, age and size respectively. Next, β_7 , β_9 , β_{11} and β_{13} capture the hypothesized interaction effects between the chain retailer's opening stores and market share, advertising intensity, age, and size respectively, while β_8 , β_{10} , β_{12} and β_{14} capture the hypothesized interaction effects between the chain retailer's closing stores and market share, advertising intensity, age, and size respectively.

Finally, \mathbf{Z} is a 4×1 vector (with $\boldsymbol{\gamma}$ as the corresponding parameter vector) of the control variables: environmental uncertainty, concentration ratio, store size and electronic retailing revenue percentage respectively. The error terms in Eq. (1) (ε_{it}) is assumed to be i.i.d. normal $\varepsilon_{it}^1 \sim N(0, \sigma_1^2)$. Next, we list various institutional issues that require us to augment the model specification in Eq. (1).

Endogeneity

Because managers can alter both the number of stores opened or closed, their advertising intensity due to anticipated performance, their actual performance and other unobserved factors, these covariates may be correlated with the error term in Eq. (1) (i.e., they are endogenous to firm value). To account for the possible endogeneity of store openings, store closings and advertising intensity in Eq. (1), we need to instrument them out of the estimation. One of the main issues in empirical research with endogeneity issues is poor instrument quality, where the observed data that are treated as instruments are not truly uncorrelated with the error term so that the entire instrumental variable procedure is rendered irrelevant (Ebbes et al. 2005).

To circumvent this issue of instrument quality, we used a latent instrumental variable (LIV) approach (Ebbes et al. 2005; Zhang, Wedel and Pieters 2009). The intuition behind the LIV approach is to use a binary, unobserved instrument that separates an observed endogenous predictor (e.g., store openings) into two components, one that is correlated with the error term and one that is not correlated with the error term in the main estimation (Eq. (1)). Recent marketing research hosts a wide variety of LIV applications, in an attempt to address endogeneity in covariates (Rutz, Bucklin, and Sonnier 2012) and mediating variables (Zhang, Wedel, and Pieters 2009). Thus, applying LIV, we augment the model specification as follows:

$$\begin{aligned}
 FV_{it} = & \beta_0 + \beta_1 \overline{\overline{OPEN}}_{it} + \beta_2 \overline{\overline{CLOSE}}_{it} + \beta_3 \overline{\overline{MKTSH}}_{it} \\
 & + \beta_4 \overline{\overline{ADV}}_{it} + \beta_5 \overline{\overline{AGE}}_{it} + \beta_6 \overline{\overline{SIZE}}_{it} + \beta_7 \overline{\overline{OPEN}}_{it} \\
 & \times \overline{\overline{MKTSH}}_{it} + \beta_8 \overline{\overline{CLOSE}}_{it} \times \overline{\overline{MKTSH}}_{it} + \beta_9 \overline{\overline{OPEN}}_{it} \\
 & \times \overline{\overline{ADV}}_{it} + \beta_{10} \overline{\overline{CLOSE}}_{it} \times \overline{\overline{ADV}}_{it} + \beta_{11} \overline{\overline{OPEN}}_{it} \\
 & \times \overline{\overline{AGE}}_{it} + \beta_{12} \overline{\overline{CLOSE}}_{it} \times \overline{\overline{AGE}}_{it} + \beta_{13} \overline{\overline{OPEN}}_{it} \\
 & \times \overline{\overline{SIZE}}_{it} + \beta_{14} \overline{\overline{CLOSE}}_{it} \times \overline{\overline{SIZE}}_{it} + \gamma Z_{it} + \varepsilon_{it}, \quad (2)
 \end{aligned}$$

where

$$\overline{\overline{OPEN}}_{it} = \overline{\overline{OPEN}}_{it} + \varepsilon_{it}^{OPEN} = \lambda_{10} + \lambda_{11} w_{1it} + \varepsilon_{it}^{OPEN}, \quad (3)$$

$$\overline{\overline{CLOSE}}_{it} = \overline{\overline{CLOSE}}_{it} + \varepsilon_{it}^{CLOSE} = \lambda_{20} + \lambda_{21} w_{2it} + \varepsilon_{it}^{CLOSE}, \quad (4)$$

and

$$\overline{\overline{ADV}}_{it} = \overline{\overline{ADV}}_{it} + \varepsilon_{it}^{ADV} = \lambda_{30} + \lambda_{31} w_{3it} + \varepsilon_{it}^{ADV}. \quad (5)$$

The slope coefficients in Eq. (2) are as defined previously, but instead of the actual measures of store openings, store closings, and advertising intensity, we used the instrumented values, $\overline{\overline{OPEN}}_{it}$, $\overline{\overline{CLOSE}}_{it}$ and $\overline{\overline{ADV}}_{it}$ respectively. The instrumented value $\overline{\overline{OPEN}}_{it}$ specified in Eq. (3) is a function of an unobserved LIV, w_{1it} , which follows a Bernoulli distribution $w_{1it} \sim B(\pi^{w_1})$, where $\pi^{w_1} = P(w_{1it} = 1)$ is the instrument probability. The intuition behind this specification is that the variance in store openings is divided into one part (w_{1it}) that is uncorrelated with

the error ε_{it} in the performance and one part (ε_{it}^{OPEN}) that is correlated with the error ε_{it} . The influence of the LIV on observed store openings can be captured by λ_{11} , whereas λ_{10} is an intercept. By construction, w_{1it} is uncorrelated with the error term in Eq. (3), so the estimate γ_1 of the impact of store openings on performance is consistent. Applying the same logic and distributional assumptions, w_{2it} and w_{3it} serve as LIVs for store closings and advertising intensity respectively.⁶

Unobserved heterogeneity

To address unobserved heterogeneity in firm performance, we specify a firm-level random intercept:

$$\beta_{0i} = \beta_0 + \eta_i, \quad (6)$$

where β_0 represent the grand intercepts of firm value and $\eta_i \sim N(0, \sigma_\eta^2)$ captures a firm-level disturbance term. We estimated all equations simultaneously using Markov Chain Monte Carlo (MCMC) methods, recursively sampling from the full conditional distributions of the model. We assumed noninformative priors, normal distributions for the slope coefficients, and inverse gamma distributions for the variance coefficients, and the burn-in contained 55,000 draws from the full conditional posterior distributions.

Hypotheses tests

We next discuss the results of the estimation presented in Table 2. Turning to the main effects, the chain retailer's opening stores ($\beta_1 = -39.160$, zero not included in the 95% confidence interval) has a negative effect on firm value, while closing stores ($\beta_2 = -12.020$, not significant [ns]) has no main effect on firm value. While size ($\beta_6 = -4.883$) has a negative main effect on firm value, the other chain retailer characteristics: market share ($\beta_3 = 39.350$, ns), advertising intensity ($\beta_4 = -9.779$) and age ($\beta_5 = 0.073$, ns) do not have a main effect on firm value.

We note that we mean-centered all explanatory variables used to create interaction terms to ensure correct interpretation of the effects. As hypothesized in H₁₀, as the chain retailer's market share increases, opening stores decreases firm value ($\beta_7 = -2.119$); and as hypothesized in H_{1c}, as the chain retailer's market share increases, closing stores increases firm value ($\beta_8 = 19.420$). As the chain retailer's advertising intensity increases, opening new stores decreases firm value ($\beta_9 = -14.040$), supporting H₂₀. As hypothesized in H_{2c}, as the chain retailer's advertising intensity increases, closing stores increases firm value ($\beta_{10} = 2.928$). As the chain retailer's age increases, opening new stores has no effect on firm value ($\beta_{11} = -1.009$, ns), not supporting H₃₀. However, as the chain retailer's age increases, closing stores increases firm value ($\beta_{12} = 1.619$) supporting H_{3c}. Finally, as hypothesized in H₄₀

⁶ Following the suggestion of anonymous reviewer, we estimated the model using an instrumental variable approach, using sales growth as an instrument for opening and closing stores. The findings were generally consistent with those obtained using the LIV approach.

Table 2
Estimation results: opening and closing stores on firm value.

| | Estimate | |
|---|-----------|-------------------------|
| | Mean | 95% confidence interval |
| Opening Stores × Market Share (H _{1o}) | −2.119** | [−3.505, −1.165] |
| Closing Stores × Market Share (H _{1c}) | 19.420** | [17.43, 21.57] |
| Opening Stores × Advertising Intensity (H _{2o}) | −14.040** | [−25.97, −2.301] |
| Closing Stores × Advertising Intensity (H _{2c}) | 2.928** | [0.962, 4.520] |
| Opening Stores × Age (H _{3o}) | −1.009 | [−3.908, 1.880] |
| Closing Stores × Age (H _{3c}) | 1.619** | [0.319, 2.865] |
| Opening Stores × Size (H _{4o}) | −6.560** | [−11.54, −1.553] |
| Closing Stores × Size (H _{4c}) | −3.884** | [−5.901, −1.806] |
| Opening Stores | −39.160** | [−58.48, −20.8] |
| Closing Stores | −12.020 | [−29.91, 7.866] |
| Market Share | 39.350 | [−6.563, 85.02] |
| Advertising Intensity | −9.779** | [−40.37, 19.7] |
| Age | 0.073 | [−9.758, 9, 794] |
| Size | −4.883** | [−5.906, −3.836] |
| Environmental Uncertainty | 0.001 | [−0.115, 0.111] |
| Concentration Ratio | −0.307 | [−1.537, 0.706] |
| Firm Average Store Size | −0.001 | [−0.006, 0.003] |
| Percentage Retail Revenue from Online Retailing | 0.028 | [−0.060, 0.126] |

Note: We tabulated posterior means and standard deviations of the parameters.

** Denotes that the 95% credible interval does not contain zero (two-sided).

and H_{4c}, as the chain retailer’s size increases, opening stores ($\beta_{13} = -6.560$) and closing stores ($\beta_{14} = -3.884$) decreases firm value. Overall, the results support seven of the eight hypotheses.

Finally, we note that all the control variables, that is, environmental uncertainty ($\gamma_1 = 0.001$, ns), concentration ratio ($\gamma_2 = -0.307$, ns), firm average store size ($\gamma_3 = -0.001$, ns) and percentage online retail revenue ($\gamma_4 = 0.028$, ns) have no effect on firm value.

Additional analysis

Stock returns

We re-estimated the model to test hypotheses using stock returns as a measure of firm performance. We calculated stock returns using monthly stock returns data from the Center for Research in Security Prices (CRSP) using the formula:

Table 3
Additional estimation results: opening and closing stores on firm stock returns.

| | Estimate | |
|---|----------|-------------------------|
| | Mean | 95% confidence interval |
| Opening Stores × Market Share (H _{1o}) | −0.976 | [−4.997, 3.359] |
| Closing Stores × Market Share (H _{1c}) | −1.600** | [−2.992, −0.41] |
| Opening Stores × Advertising Intensity (H _{2o}) | −2.235** | [−3.727, −0.503] |
| Closing Stores × Advertising Intensity (H _{2c}) | 10.530** | [0.250, 20.81] |
| Opening Stores × Firm Age (H _{3o}) | 40.930** | [0.3352, 81.66] |
| Closing Stores × Firm Age (H _{3c}) | 4.349** | [1.143, 7.55] |
| Opening Stores × Firm Size (H _{4o}) | −17.870 | [−36.18, 0.387] |
| Closing Stores × Firm Size (H _{4c}) | −0.446 | [−3.352, 2.463] |
| Opening Stores | −0.839 | [−5.570, 4.84] |
| Closing Stores | −6.584** | [−8.477, −5.684] |
| Market Share | 1.199 | [−0.023, 2.169] |
| Advertising Intensity | −6.722 | [−13.67, 0.229] |
| Firm Age | −8.705** | [−16.580, −0.845] |
| Firm Size | 2.810 | [−1.730, 7.353] |
| Environmental Uncertainty | 0.001 | [−0.052, 0.052] |
| Concentration Ratio | 0.529 | [−0.446, 1.406] |
| Firm Average Store Size | 0.000 | [−0.001, 0.001] |
| Percentage Retail Revenue from Online Retailing | −0.015 | [−0.029, 0.001] |

Note: We tabulated posterior means and standard deviations of the parameters.

** Denotes that the 95% credible interval does not contain zero (two-sided).

$\text{Log} \prod_{m=11}^{12} (1 + \text{Ret}_{im})$, where Ret_{im} is the return for the firm i 's stock in month m during the year (Mizik and Jacobson 2008). We present the results of the model estimation with stock returns as the dependent variable in Table 3.

Focusing on the main effects, the chain retailer's opening stores ($\beta_1 = -.839$, ns) has no main effect on stock returns, while closing stores ($\beta_2 = -6.584$) decreases stock returns. Also, while the chain retailer's age decreases stock returns ($\beta_5 = -8.705$), the other chain retailer characteristics: market share ($\beta_3 = 1.199$, ns), advertising intensity ($\beta_4 = -6.722$, ns), age ($\beta_5 = -8.705$, ns) and firm size ($\beta_6 = 2.810$, ns) have no main effects on stock returns.

Turning to the hypothesized effects, as the chain retailer's market share increases, opening stores has no effect on stock returns ($\beta_7 = -.976$, ns) and closing stores decreases stock returns ($\beta_8 = -1.600$). With respect to advertising intensity, as the chain retailer's advertising intensity increases, opening stores decreases stock returns ($\beta_9 = -2.235$) and closing stores increases stock returns ($\beta_{10} = 10.530$). As the chain retailer's age increases, opening stores has no effect on stock returns ($\beta_{11} = 40.930$, ns) and closing stores increases stock returns ($\beta_{12} = 4.349$). Also, as the chain retailer's size increases, opening ($\beta_{13} = -17.870$, ns) and closing ($\beta_{14} = -.446$, ns) stores have no effect on stock returns. Overall, the results from the estimation using stock returns as the dependent variable provide support for the interaction hypotheses pertaining to advertising intensity. However, the pattern of results is different for the interactions pertaining to the three firm demographics of market share, firm size and firm age, from that obtained using the chain retailer's firm value. We conjecture that this difference pertaining to the demographic variables of market share, firm size, and firm age, may be because stock returns is a market-based measure, which does not take into account the book value of the firm's total assets which is factored in the firm value measure, which may be better able to capture the interaction effects of the three firm characteristics of market share, age, and size.

Systematic risk

We also conducted additional analysis with systematic risk as a measure of firm performance. We follow (McAlister, Srinivasan, and Kim 2007) and estimate the firm's systematic risk, β , for a five-year moving window using stock returns for the previous 60 months, relative to the equal-weighted return for the stock market for that period. We use monthly stock data to compute firm i 's systematic risk measure $\beta_i(\text{hat})$, *ex post*, for a period by using a least squares regression of the form: $R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$, $t = \text{Start}, \dots, \text{End}$ where $R_{it} = \text{Ln}(D_{it} + P_{it}) / P'_{it-1}$ and $R_{mt} = \text{Ln}(L_t / L_{t-1})$ where R_{it} is the *ex post* rate of return for stock i during period t , R_{mt} is an index of the *ex post* return for all NYSE firms during month t (i.e., the market rate of return) and α_i is the intercept of the fitted line of R_{it} using R_{mt} , D_{it} is cash dividend payable on common stock i in month t , P_{it} is closing price of common stock i at end of month t , P'_{it-1} is closing price at end of month $t - 1$ adjusted for capital changes (e.g., stock splits, and stock dividends) and L_t, L_{t-1} are the Fisher's

link relative, a market price index of all firms on the NYSE at months t , and $t - 1$ respectively, adjusted for dividends and all capital changes. The slope of the regression equation $\beta_i(\text{hat})$ is the empirical estimate of systematic risk β_i of firm i .

We present the results of this estimation in Table 4. Focusing on the main effects, the chain retailer's opening stores ($\beta_1 = -52.150$) has a negative main effect on systematic risk, while closing stores ($\beta_2 = 1.947$, ns) has no main effect on systematic risk. Also, while the chain retailer's size ($\beta_6 = -3.054$) has a negative main effect on systematic risk and advertising intensity has a positive main effect on systematic risk ($\beta_4 = 32.530$), the other chain retailer characteristics: market share ($\beta_3 = -12.230$, ns), and age ($\beta_5 = -5.061$, ns) do not have a main effect on systematic risk. The positive main effect of advertising intensity on increasing systematic risk is different from the negative effect of advertising intensity on systematic risk for manufacturing firms reported in the literature by McAlister, Srinivasan, and Kim (2007). We conjecture that this may be because of differences in the samples as well as the explanatory variables (and related interaction effects) across the two studies.

Turning to the hypothesized effects, as the chain retailer's age increases, opening stores increases systematic risk ($\beta_{11} = 1.256$) and closing stores decreases systematic risk ($\beta_{12} = -2.541$). Also, as the chain retailer's size increases, closing stores increases systematic risk ($\beta_{13} = 3.363$), as hypothesized. We find no significant interaction effect between the chain retailer's market share and advertising intensity and opening and closing stores on systematic risk. Overall, the results from the estimation using systematic risk as the dependent variable provide only partial support for the hypotheses. We conjecture that this may be because the systematic risk measure, which uses a five-year period, has less power to detect the hypothesized effects, which are at the annual level.

Marginal effects of opening and closing stores

From a theory-building perspective, the hypotheses tests identify which chain retailer characteristics (market share, advertising intensity, age, and size) interact with store openings and closings to affect firm value. To examine the managerial relevance of the results, we compute the chain retailer-specific marginal effects of opening and closing stores (i.e., their net effectiveness, considering all the interaction effects simultaneously). From Eqs. (1)–(3), the marginal effects of opening and closing stores on firm value are given as:

$$ME_{open} = \frac{\partial(MB)}{\partial(OPEN)} = \beta_1 + \beta_7 MKTSH_{it} + \beta_9 ADV_{it} + \beta_{11} AGE_{it} + \beta_{13} SIZE_{it}, \tag{7}$$

$$ME_{close} = \frac{\partial(MB)}{\partial(CLOSE)} = \beta_2 + \beta_8 MKTSH_{it} + \beta_{10} ADV_{it} + \beta_{12} AGE_{it} + \beta_{14} SIZE_{it}, \tag{8}$$

The portions β_1 and β_2 of the marginal effects in Eqs. (7) and (8) respectively are common to all sample chain retailers. So,

Table 4
Additional estimation results: opening and closing stores on firm systematic risk.

| | Estimate | |
|---|-----------|-------------------------|
| | Mean | 95% confidence interval |
| Opening Stores × Market Share (H _{1o}) | 0.286 | [−4.876, 4.435] |
| Closing Stores × Market Share (H _{1c}) | −5.099 | [−13.36, 2.054] |
| Opening Stores × Advertising Intensity (H _{2o}) | −18.770 | [−39.38, 1.905] |
| Closing Stores × Advertising Intensity (H _{2c}) | −2.204 | [−5.786, 2.377] |
| Opening Stores × Age (H _{3o}) | 1.256** | [0.802, 1.681] |
| Closing Stores × Age (H _{3c}) | −2.541** | [−3.881, −1.309] |
| Opening Stores × Size (H _{4o}) | −2.439 | [−6.065, 1.186] |
| Closing Stores × Size (H _{4c}) | 3.363** | [2.399, 4.329] |
| Opening Stores | −52.150** | [−95.03, −7.942] |
| Closing Stores | 1.947 | [−0.760, 3.986] |
| Market Share | −12.230 | [−29.66, 5.801] |
| Advertising Intensity | 32.530** | [9.709, 55.75] |
| Age | −5.061 | [−11.95, 1.813] |
| Size | −3.054** | [−5.06, −1.048] |
| Environmental Uncertainty | −0.068 | [−0.173, 0.087] |
| Concentration Ratio | −0.478 | [−1.81, 0.781] |
| Firm Average Store Size | −0.001 | [−0.007, 0.005] |
| Percentage Retail Revenue from Online Retailing | −0.312 | [−0.77, 0.062] |

Note: We tabulated posterior means and standard deviations of the parameters.
** Denotes that the 95% credible interval does not contain zero (two-sided).

we focus on the portion of the marginal effect that is unique to a chain retailer, that is, its CME, defined as the marginal effect minus the intercept terms β_1 and β_2 induced through $\beta_7, \beta_9, \beta_{11}$, and β_{13} for opening stores and $\beta_8, \beta_{10}, \beta_{12}$, and β_{14} for closing stores. The CMEs and their statistical significance (negative, positive or not different from zero) indicate whether the chain retailer (in a given year) obtains less than, more than or about the same firm value from opening and closing stores as the average of the chain retailers in the industry in that year (the intercept terms capture the average effects).

We estimated these two expressions of ME_{open} and ME_{close} and their statistical significance using a Bayesian framework by sampling concurrently with the MCMC estimation algorithm. With this approach, we bypassed issues of asymptotic approximations of the standard errors and supplemental procedures after the estimation.

Summary of CMEs across chain retailers and over time

We summarize the CMEs of chain retailers' opening and closing stores, based on whether they are negative and significant, not different from zero or positive and significant (i.e., 3 (opening stores) × 3 (closing stores) = 9 cells). We provide the frequency and percentage of chain retailer-years in each of the nine cells in Table 5. As the sample is a longitudinal panel, the unit of analyses for the discussion in this section is a 'firm-year' so that a given chain retailer's CME, can change over time. For example, Walgreens Inc., which is in our sample, had zero CMEs from opening stores for five years, with negative or positive CMEs from other years. We use the term 'firms' and 'chain retailers' for ease of exposition in this section to refer to firm-years.

First, many chain retailers do not achieve either superior or inferior performance (relative to the industry average) from

opening and closing stores. With respect to opening stores, 798 chain retailers (55%) obtain zero CMEs, that is, are unable to leverage above-industry firm value. Also, with respect to closing stores, 392 chain retailers (27%) extract zero CMEs. Also, 234 chain retailers (16%) obtain zero CMEs from both opening as well as closing stores.

Second, no chain retailer achieves superior performance from opening stores while extracting zero or negative CMEs from closing stores. However, 523 chain retailers (36%) receive positive CMEs from closing stores, but extract zero CMEs from opening stores. Some chain retailers achieve inferior performance from opening (closing) stores and extract zero CMEs from closing (opening) stores. For example, 158 chain retailers (11%) receive negative CMEs from opening stores, but extract zero CMEs from closing stores and 41 chain retailers (3%) achieve negative CMEs from closing stores, but extract zero CMEs from opening stores.

Finally, there is a small proportion (98 chain retailers, 7%) of "clear winners", that is, chain retailers who achieve superior performance from both opening and closing stores. In what we consider to be an encouraging finding, there are no "clear losers",

Table 5
Distribution of retailers by contingency-induced marginal effects (CMEs).

| Opening Stores | Closing Stores | | | Row totals |
|----------------|----------------|-----------|-----------|--------------|
| | Negative | Zero | Positive | |
| Negative | 272 (19%) | 158 (11%) | 121 (8%) | 551 (38%) |
| Zero | 41 (3%) | 234 (16%) | 523 (36%) | 798 (55%) |
| Positive | 0 (0%) | 0 (0%) | 98 (7%) | 98 (7%) |
| Column totals | 313 (22%) | 392 (27%) | 742 (51%) | 1,447 (100%) |

% in cells is the overall percentage of sample of retailers (e.g., 272 is 19% of 1,447 retailer-years).

that is, chain retailers who achieve inferior performance from both opening and closing stores.

Discussion

Chain retailers continually open stores and close stores. Yet, there are few insights on the effects of these strategic changes on chain retailer performance. In this paper, we develop and find support for a contingency-based approach to model the relationships between a chain retailer's opening and closing stores and its performance. We conclude with a discussion of the paper's theoretical contributions, managerial implications, and limitations and opportunities for future research.

Theoretical contributions

Channel management

Prior work on channel strategy has focused on the impact of market share on channel strategy (e.g., Reibstein and Farris 1995), the effect of the mode of channel strategy on firm performance (Srinivasan 2006), and the addition of a new type of channel (e.g., Geyskens, Gielens and Dekimpe 2002; Lee and Grewal 2004) on firm performance. However, to the best of our knowledge, no work to date, has examined the effects of a firm's expansion/contraction channel strategies on *firm-level* performance, the focus of this manuscript. Thus, we extend prior empirical work on channel strategy by exploring the effects of retail store openings and closings on firm performance.

We demonstrate the contingent impact of chain retailer's characteristics on the relationship between a chain retailer's store opening and closing decisions on its performance. Chain retailer characteristics have asymmetric, as well as opposing, interaction effects on the impact of opening and closing stores on chain retailer performance. For example, as the chain retailer's market share increases, opening stores decreases and closing stores increases firm value. However, as the chain retailer's size increases, opening and closing stores both decrease firm value; however, the negative effect of opening stores on firm value is larger than the negative effect of closing stores on firm value. Our asymmetric findings (e.g., the contingent effect of market share on the effect of opening versus closing stores on firm value) suggest that firm characteristics must be considered when analyzing the impact of chain retailer's store opening and closing decisions on firm value.

In the retailing context, Kaufmann, Donthu, and Brooks (2000) derive a model which incorporates opening delays, firm planning horizons, and discount rates in determining appropriate sites for multiunit retail systems, highlighting the importance of the consideration of contingent factors related to retailer firm performance. In a similar vein, we suggest that consideration of a firm's characteristics is critical to how the stock market values a chain retailer's decision to open and close stores. Future research aimed at understanding the chain retailers' motivations in opening and closing strategies (e.g., older firms may find it

more efficient to close stores than to try and tap into new markets) would be a worthy extension of this work.

Marketing metrics

The relationship between marketing mix elements (e.g., price, product, promotion, and place) on firm performance, especially shareholder value, has been identified as a key research topic (Rust et al. 2004). In addition, while there is a rich literature linking marketing efforts such as advertising (e.g., Mizik and Jacobson 2003), customer satisfaction (e.g., Aksoy et al. 2008), branding strategy (e.g., Rao, Agarwal, and Dahlhoff 2004), and product quality (e.g., Tellis and Johnson 2007) to firm performance, research analyzing the effects of channel strategy on stock market performance is relatively sparse (Geyskens, Gielens and Dekimpe 2002; Lee and Grewal 2004; Srinivasan 2006). Moreover, past research has not examined the elasticity or marginal effects of chain retailer-level distribution decisions on chain retailer-level performance. We take a first step in this area by identifying the CMEs arising from chain retailers' opening and closing stores, key distribution channel decisions. The CME analysis indicates heterogeneity across chain retailers in the performance effects of opening and closing stores.

Managerial implications

Our findings indicate that as a firm's market share increases and the number of store openings (closings) increase, firm value decreases (increases). *This suggests that high market share firms can extract firm value by "trimming" or closing unprofitable store locations.*

We also find a similar pattern of effects as a firm's advertising intensity increases. This finding suggests that marketing and operations departments may benefit by coordinating together more closely. However, opening store locations in markets unaligned with the retailer's target consumer base may dilute the brand equity generated through the retailer's advertising efforts. *Highly advertised firms may try to leverage their brand equity by opening new stores.*

As firms become older, their ability to respond to consumer and market changes is likely to diminish due to structural and organizational inertias. Thus, the market rewards older firms for closing store locations and focusing on a core group of retail locations. This offers firms an opportunity to take a portfolio approach to their store management. As a firm becomes older, it can view its store locations similar to products in the maturity stage of their life cycles. *Thus, older chain retailers may benefit by strategic store closures which will enhance firm value.*

As firm size increases, both opening and closing stores decrease firm value, though the effect is greater for opening stores. This suggests a predicament for large firms. They are penalized whether they open or close stores, although they are penalized more for opening stores. Investors and analysts closely follow the activities of large firms. Thus, we infer that any change in strategic direction appears, to the investor market, as arising out of problems the firm is facing (e.g., opening stores because

existing stores are unprofitable or closing stores because existing stores are making losses). By increasing investor confidence, large firms may be able to mitigate some of the negative impact of store openings and closing decisions on firm value. *Firms should dedicate more attention to investor relations to ensure that the (investors) market understands the planning behind store openings and closures.*

This study's findings on CMEs (i.e., the portion of the marginal effect beyond the industry average, indicating performance rewards from opening and closing stores) provide insights to managers about the effectiveness of their chain retailer's decisions to open and close stores. A key insight is that most chain retailers appear to be uni-dimensional with respect to achieving superior performance through their decisions to open and close stores. For example, 523 chain retailers (36%) receive positive CMEs from closing stores, but extract zero CMEs from opening stores. Thus, most chain retailers are unable to simultaneously effectively execute decisions to open and close stores. *Dexterity in effectively managing of new stores and closing some stores appears to be a key distribution challenge for chain retailers.*

An analytical approach to opening and closing stores should take into account the joint impact of all the interaction effects to determine the firm value implications of firms' decisions to open and close stores. *Managers can use this study's approach to generate chain retailer-specific CME estimates of the effects of their and their competitors' decisions to open and close stores on firm value.*

Limitations and future research

As this research represents a first examination of the effect of chain retailer-level opening and closing stores on chain retailer performance, it has some limitations that provide opportunities for further research. First, this paper's focus on opening and closing stores raises questions about the generalizability of the study's findings to other distribution settings (e.g., franchised units). Moreover, the study's sample ($n = 132$), although representative of the population of chain retailers includes only publicly listed chain retailers for which data are publicly available. As a result, we are not able to consider the chain retailer's geographical distribution of stores and product assortments as explanatory variables in our theory development and empirical testing. Further research in other settings (e.g., financial services, high technology industries, and emerging markets), using data on private retailers and when additional data on chain retailers become available to researchers would be useful.

Second, there is a difference between opening and closing stores in an already served market versus opening them in a distant market. Unfortunately, the unit of analysis for this paper is the chain retailer – and hence, we are not able to examine this issue as data on store openings and store closings are aggregated to the level of the chain retailer. Future research that examines the issue using store-level data would be useful.

Third, the use of secondary data precluded consideration of organizational factors (e.g., culture, market orientation, and top management objectives) that may influence chain retailers' decisions to open or close stores. Also, retailing is an industry characterized by a high level of chain retailer failures.⁷ Future research that relates organizational factors to retailer distribution strategies by utilizing surveys, focus groups, or in-depth interviews to chain retailer performance, including chain retailer survival, will extend this study's findings.

On net, we hope that we have extended the marketing literature in a distinctive way by generating insights on the performance implications of a key aspect of chain retailers' marketing strategy – opening and closing stores – to their performance.

Executive summary

A key element of a chain retailer's marketing strategy is the number of stores it operates to reach its consumers. These decisions not only affect the retailer's performance, but also firm value, as investors pay attention to such strategic decisions. Opening stores has a different strategic emphasis (e.g., revenue expansion and entering markets) from closing stores (e.g., cost reduction and exiting markets), with different implications for the retailer's performance.

The authors examine factors which influence the effects of a chain retailer's opening and closing store decisions on firm value. Specifically, the authors hypothesize effects of the chain retailer's market share, advertising intensity (advertising stock to sales ratio), age, and size on the relationships between the number of store openings and closings on its firm value. They use data from 132 large, publicly listed US chain retailers from 1998 to 2009 to test their hypotheses. The findings indicate that

- As a chain retailer's market share and advertising intensity increase, opening stores decreases the retailer's market value, while closing stores increases it.
- A retailer's age does not impact the effect of opening stores on firm value, but as a retailer's age increases (get older), closing stores increases its firm value.
- Finally, when a chain retailer's size increases, opening and closing stores both decrease firm value; however, the negative effect of opening stores on firm value is larger than the negative effect of closing stores.

The authors also develop an approach to analyze the impact of a retailer's opening and closing decisions on its firm value, relative to industry competitors. A key insight is that most chain retailers appear to be uni-dimensional with respect to achieving superior performance through their decisions to open and close stores. For example, some firms (55% of the sample) are unable to obtain above-industry (average) firm value from opening stores, while others (27%) are unable to do so through store closures. Yet others (16%) are unable obtain above average-industry

⁷ <http://seekingalpha.com/article/163836-retail-firms-at-risk-for-bankruptcy> (accessed April 12, 2011).

firm value from either opening or closing stores. Overall, there appear to be opportunities for chain retailers to improve the impact of their store opening and closing decisions on firm value. Chain retailers (and investors) can use this approach (which is relatively simple to implement in Microsoft Excel) to estimate whether a chain retailers will obtain less than, the same, or more firm value benefit from opening and closing stores compared to the other chain retailers.

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