Are Super Bowl ads a super waste of money? Examining the intermediary roles of customer-based brand equity and customer equity effects

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ABSTRACT

Prior research on the impact of marketing activities such as Super Bowl advertising on firm value has produced mixed results. Drawing on the marketing productivity chain, this study introduces hitherto neglected customer-based brand equity effects as indicator for investors' expectations about future customer equity effects (i.e., expected future cash flow deviations) and find that customer-based brand equity mediates the relationship between Super Bowl advertising and abnormal stock returns. Using event study methodology, the authors analyze a sample of 62 ads for which data is available on both measures that represent brand equity and stock price from the Super Bowls from 2008 to 2012. This study finds that Super Bowl ads can be worth the large investment, but *only* if they enhance customer-based brand equity. The reverse also holds in that a negative impact on stock return is expected when a Super Bowl ad reduces customer-based brand equity. Furthermore, empirical evidence suggests a ceiling effect, that is, for brands with high pre-Super Bowl brand equity the relationship between change in customer-based brand equity and stock return is significantly smaller.

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In the U.S., the Super Bowl attracts more viewers and media attention for its advertising than any other single event for the year (Tomkovick, Yelkur, Rozumalski, Hofer, & Coulombe, 2011). Previous research focuses on executional factors that are associated with the effectiveness of Super Bowl ads. A majority of these studies focuses on short-term effectiveness measures such as recall, buzz, or ad likeability (e.g., Chang, Jiang, & Kim, 2009; Cheong & Kim, 2012; Li, 2010; Nail, 2007; Newell, Henderson, & Wu, 2001; Siefert et al., 2009; Tomkovick, Yelkur, & Christians, 2001). Another group of studies examines whether Super Bowl ads have a positive impact on stock returns (a longer-term impact measure) in the days and weeks following the event (e.g., Choong, Filbeck, Tompkins, & Ashman, 2003; Eastman, Iyer, & Wiggenhorn, 2010; Fehle, Tsyplakov, & Zdorovtsov, 2005; Kim & Morris, 2003; Tomkovick et al., 2011). However, a significant gap exists in the literature regarding the impact of Super Bowl ads on building brand equity and contributing to customer equity.

As prior event studies on the impact of Super Bowl ads on stock returns do not find a consistent main effect of these ads on firm value, more attention should be paid to the marketing productivity chain (Rust, Ambler, Carpenter, Kumar, & Srivastava, 2004). A major goal of advertising is to have consumer impact in the form of more positive attitudes. Therefore, examining the impact of Super Bowl ads on brand perceptions is important, as positive changes in brand perceptions contribute to brand and customer equity, product market outcomes, and ultimately firm value. This study addresses this research gap and examines how customer-based brand equity mediates the impact of Super Bowl ads on firm value.

1. Theoretical foundations

1.1. Understanding brand equity and customer equity

Customer equity and brand equity are key marketing concepts that are of major concern to marketing research in various contexts (Kim, 2015; Chun, Ko, & Ko, 2013; Kim & Brandon, 2010; Yang, Kim, & Kim, 2014; Zhang, Ko, & Kim, 2010). Customer equity is "the sum of lifetime values of all customers" (Rust, Lemon, & Zeithaml, 2004). During the emergence of this concept, many research efforts have been concerned with the estimation of customer lifetime value (Reinartz & Kumar, 2000). Financial-oriented models operationalize customer equity as "the discounted value or present value of the projected net cash flows that a firm expects to receive from the customer over time" (Berger & Bechwati, 2001, p. 49f; see also Berger & Nasr, 1998; Gupta, Lehmann, & Stuart, 2004).

While this definition is straightforward, its concrete implementation is not, as the models include many parameters such as customer acquisition, retention, churn, and winback rates which depend on customer attitudes, perceptions, intentions, and other factors. To account for this

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issue, researchers have identified key components or drivers of customer equity. Brand equity is one of the most important drivers and is closely related to the emergence of customer equity (e.g., Chae, Ko, & Han, 2015; Leone et al., 2006; Rust, Lemon, et al., 2004). The definition of customer-based brand equity (Keller, 1993) comprises "thoughts, feelings, perceptions, images, and experiences" about a brand (Leone et al., 2006, p. 126). The concept of customer-based brand equity (e.g., Aaker, 1995) is rooted in the notion that the power of a brand comes from within the minds of consumers and what they have experienced and learned about the brand over time (Keller, 2003).

An understanding of brand equity formed by customer preferences, attitudes, perceptions, and expectations of the firm's marketing actions is a fundamental prerequisite to be able to calculate the resulting customer equity (Hogan, Lemon, & Rust, 2002; Kim, Park, Kim, Aiello, & Donvito, 2012; Kumar & Umashankar, 2012; Rust, Lemon, et al., 2004). However, customer equity models often use outcomes of strong brands such as higher share-of-wallet and higher purchase frequency in their calculations rather than estimating the impact of drivers such as high brand equity on those metrics in the first place. This weakness of many customer equity models may overlook the "option value" of brands (Leone et al., 2006).

1.2. Advertising as driver of brand and customer equity

In the context of this study, which examines the impact of an individual marketing mix variable (advertising) on stock prices, both brand and customer equity are relevant. In essence, the goal of advertising is to have customer impact by helping to reinforce or enhance consumer perceptions and associations with the brand (Rust, Ambler, et al., 2004).

The chain of marketing productivity (Rust, Ambler, et al., 2004) explores the way in which marketing expenditures affect what customers know, believe, feel, and ultimately how they behave. The authors utilize a framework to illustrate how these non-financial measures of marketing effectiveness ultimately drive the financial performance measures such as sales, profits, and shareholder value in both the short and the long run via impact on the customer and, in turn the market. This study adopts this perspective in examining the impact of Super Bowl advertising on stock price.

1.3. Linking Super Bowl advertising, brand equity, and customer equity to shareholder value

The firm's market capitalization is a proxy for shareholder value because the price of the stock provides an unbiased estimate of the firm's intrinsic value—assuming that investors are rational and stock markets are efficient (Fama, 1970). This stock price is a representation of the

Table 1
Mean CAR for selected trading days and windows ($N_{firm-year} = 49$).

Day	Mean AR	Patell Z	BMP Z	Day	Mean AR	Patell Z	BMP Z
−5	−0.26%	−0.74	−0.94	(+1,+5)	1.01%	1.30*	1.37*
−4	0.01%	−1.38*	−1.20	(+1,+10)	1.33%	1.46*	1.69**
−3	0.85%	1.71**	1.64*	(−1,+5)	1.13%	1.29*	1.38*
−2	0.02%	−0.60	−0.51	(−1,+10)	1.45%	1.46*	1.64*
−1	0.13%	0.26	0.25	(−5,+5)	1.76%	0.69	0.68
0 (Super Bowl)	—	—	—	(−5,+10)	2.08%	1.00	1.04
+1	0.44%	1.10	1.12				
+2	0.21%	1.27	1.54*	***p < 0.01, **p < 0.05, *p < 0.10			
+3	0.05%	0.66	0.78				
+4	0.02%	0.22	0.15				
+5	0.29%	−0.31	−0.36				
+6	0.16%	0.38	0.31				
+7	0.12%	1.22	1.51*				
+8	0.02%	−0.39	−0.38				
+9	0.12%	0.81	0.67				
+10	−0.09%	−0.31	−0.42				

financial market's (i.e., investors') expectations of the sum of a firm's discounted future cash flows. When investors become aware of new, unanticipated information, they interpret this information in terms of its value-relevance, adapt their expectations of future cash flows accordingly, and sell or buy affected stocks until a new market equilibrium is reached.

Advertising in general and Super Bowl advertising in particular can be such a value-relevant signal to investors (Srinivasan, Pauwels, Silva-Risso, & Hanssens, 2009). Concerning Super Bowl advertising, however, results of prior research on the impact of stock prices are rather mixed and inconclusive (Choong et al., 2003; Eastman et al., 2010; Fehle et al., 2005; Kim & Morris, 2003; Tomkovick et al., 2011). One potential reason is that this research has neglected to address how advertising affects brand and customer equity. Select event studies already examine the role of ad likeability (e.g., USA Today Ad Meter) in explaining stock price changes attributed to Super Bowl ads but do not find a clear relationship. While ad likeability may influence customer-based brand equity, additional factors beyond ad likeability influence brand perception (e.g., ad-brand fit, brand positioning in the ad). Some expert panel ratings, such as ADPLAN (put out annually by Northwestern's Kellogg School's MBA program) incorporate additional factors. The authors include both types of Super Bowl ad ratings into their model as control variables (see Fig. 1). In order to improve customer equity, Super Bowl advertising must first improve brand equity. Following the prediction of the Efficient Market Hypothesis (Fama, 1970), the assumption seems plausible that investors form expectations about how Super Bowl advertising is able to improve customer-based brand
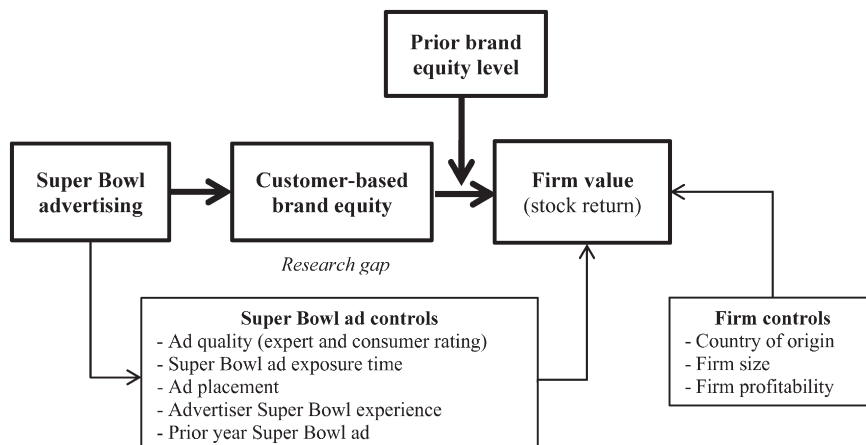

Fig. 1. Brand perceptions as mediator between Super Bowl ads and firm value.

Table 2
Descriptive statistics and correlations ($N_{brand\text{-}firm\text{-}year} = 62$).

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Abnormal returns (+1, +5)	1													
ΔBrand Equity (days 1 to 5 after event)	0.42***	1												
Pre-Super Bowl Brand Equity Level	−0.13	−0.13	1											
ΔBrand Equity * Pre-Super Bowl Brand	−0.19	0.09	−0.01	1										
Total ad exposure time (sum of seconds)	−0.09	0.04	0.00	0.11	1									
Expert rating (Kellogg School ADPLAN)	0.22*	0.14	−0.05	0.04	0.09	1								
Consumer rating (USA Today)	−0.07	0.03	−0.02	0.00	0.21*	0.07	1							
Experience (# of ads in previous 10 years)	0.05	0.17	−0.19	0.05	0.28**	0.13	0.39***	1						
No Super Bowl ad in year before	0.03	0.18	−0.02	0.17	0.21*	0.26**	0.34**	0.66***	1					
Ad spot in half 1	0.10	−0.03	0.10	0.07	0.23*	−0.24	0.21*	0.15	0.05	1				
Ad spot in half 2	−0.09	0.03	−0.14	0.03	0.18	0.11	−0.18	−0.06	−0.02	−0.63***	1			
Return on assets	−0.13	−0.18	0.39***	0.21	0.25**	−0.04	−0.17	−0.09	0.04	0.06	0	1		
ln (total assets)	−0.21*	−0.17	0.12	0.07	−0.23*	−0.18	0.09	0.22*	−0.07	0.10	0	−0.25**	1	
US brand	−0.01	0.09	0.23*	0.03		0.14	0.02	−0.33***	0.08	−0.03	−0.026	0.34**	−0.46***	1
M	0.01	0.00	0.09	0.00	4.42	0.06	−0.05	3.73	0.53	0.61	0.61	0.07	17.45	0.69
SD	0.05	0.02	0.15	0.00	37.84	0.97	0.96	2.98	0.50	0.49	0.49	0.06	1.88	0.46
Min	−0.14	−0.06	−0.21	−0.01	−32.07	−3.69	−1.78	0	0	0	0	−0.05	12.65	0
Max	0.19	0.04	0.44	0.01	117.93	2.14	2.21	9	1	1	1	0.16	20.50	1

*** p < 0.01
** p < 0.05
* p < 0.10

equity and ultimately customer equity, that is, the sum of future cash flows attributed to customers:

H1. Changes in customer-based brand equity mediate the impact of Super Bowl advertising on investors' future cash flow expectations, i.e., changes in customer-based brand equity correlate positively with abnormal stock returns.

1.4. Moderating impact of prior customer-based brand equity

Advertising for familiar, high market share products is largely defensive in nature (Barnard & Ehrenberg, 1997; Ehrenberg, 2000; Sharp, 2010). In most mature markets, sales of a well-known product cannot increase unless share is taken away from another competitor (Raj, 1982; Stewart, 1992). However, especially for high-share and/or products with high brand equity, the pool of potential switchers is finite and thus the impact on customer equity limited (Stewart, 1992). Especially in highly competitive environments, this effects implies a "ceiling" level which is very difficult, if not impossible, to exceed. As noted by Slotegraaf and Pauwels (2008), extant research implies the difficulty for promotional efforts to lead to long-term benefits for a firm. Along these lines, Slotegraaf and Pauwels (2008) suggested the existence of ceiling effects for firms with high equity as they found that lower equity firms obtain greater long-term benefits than high equity firms. Thus, brand equity "peaks" to the point where the role of advertising is on maintaining and defending the existing position, which reinforces Ehrenberg's view of advertising (2000).

Considering this argumentation, the authors predict that investors anticipate greater long-term benefits for low equity brands provided that Super Bowl advertising was successful in improving customer-based brand equity. For high equity brands, investors do not expect sustainable effects on future customer equity and cash flows but rather assume that those brands are able to conserve the status quo in the long-term:

H2. The level of prior customer-based brand equity moderates the impact of customer-based brand equity on abnormal stock returns, so that for brands with low (high) prior levels of brand equity the impact of brand equity changes on stock price are larger (smaller).

2. Methodology and model

Brown and Warner (1985) introduce event studies, using daily stock returns, as a tool to measure the financial impact of events (such as Super Bowl advertising) on firm value. The authors apply the Fama and French four-factor model (Fama & French, 1993; Carhart, 1997) and regress each firm's stock returns on the relevant market index as well as the size, value and momentum factor over the estimation period $t = -255$ to $t = -11$, relative to the event $t = 0$ (Super Bowl Sunday):

$$R_{it} - R_{RFt} = \alpha_i + \beta_i \cdot RMRF_t + s_i \cdot SMB_t + h_i \cdot HML_t + u_i \cdot UMD_t + \varepsilon_{it}, \quad (1)$$

where R_{it} is the stock return i on day t. R_{RFt} is the risk-free rate of return on day t. $RMRF_t$ is the risk-free adjusted market return on day t. SMB_t is the difference between small and large stock returns on day t. HML_t is the difference between high and low book-to-market stock returns on day t. UMD_t is the difference between stock returns with an upward and a downward momentum factor. E_{it} refers to the error term of stock i on day t. Intercept α_i is the abnormal return of stock i on day t. The four slope estimates β_i, s_i, h_i, and u_i, measure the sensitivity of stock i's risk-free adjusted return for the four risk factors.

The difference between estimated and the actual returns forms the "abnormal return" (AR). AR is a proxy for investors' expectations about future cash flow deviations caused by the event. Due to delay of information or unawareness of the extent of the event, calculating the cumulative abnormal return (CAR) is more reasonable. CAR sums up

all ARs of a firm over the observed period of time. Consequently, if no event occurred or if the event was considered insignificant, CAR equals 0.

Using CAR as the dependent variable, the authors estimate a multi-level linear regression model with random intercept, because the data has a nested structure: some firms advertise multiple brands while some brands produce repeated measures because they appear in more than one Super Bowl. Thus, to estimate the impact of change in customer-based brand equity on firm CAR, the authors apply the following model:

$$
\begin{aligned}
CAR(t, t+s)_{yij} = {} & \beta_{0ij} + \beta_1 \cdot \Delta Brand\ Equity_{yij} \\
& + \beta_2 \cdot Pre{-}Super\ Bowl\ Brand\ Equity\ Level_{yij} \\
& + \beta_3 \cdot \Delta Brand\ Equity_{yij} * Pre{-}Super\ Bowl\ Brand\ Equity\ Level_{yij} \\
& + (Control\ variable_{yij})_{1,10} \cdot \boldsymbol{\eta} + \varepsilon_{yij}.
\end{aligned}
\tag{2}
$$

The cumulative abnormal stock return CAR for the window from day t to day $t + s$ in year y and for brand i and firm j is a function of the random intercept β_{0ij}, the covariates $\Delta Brand\ Equity$, $Pre\text{-}Super\ Bowl\ Brand$ $Equity\ Level$, and the interaction term as well as the various control variables (for a definition of the various control variables see Fig. 1 and the following section). The authors mean center all metric covariates. Due to a potential heteroscedasticity bias, the authors adjust standard errors by using firm cluster-robust standard error estimates. Since some brands appear in Super Bowl ads in consecutive years, the authors also control for potential autocorrelation by assuming an autoregressive structure of order 1 (AR(1)-process). Variance Inflation Factors are below common thresholds.

3. Empirical study

3.1. Measures and sample

The data source for the customer-based brand equity measure is the BrandIndex provided by YouGov Group, which specializes in online-panels and monitors brands in several major markets worldwide. Recent research uses this unique data source (Luo, Raithel, & Wiles, 2013), because YouGov monitors consumer perceptions of more than 1000 brands by surveying a representative sample of 5000 people each day (from a panel size of 1,500,000 U.S. consumers). This large panel size is advantageous due to a higher degree of representativeness of the brand user universe, thereby capturing the "wisdom of the crowd" (Tirunillai & Tellis, 2012). Additionally, the daily level of brand data is beneficial because this aggregation level reflects changes in brand user perceptions following the Super Bowl in a timely manner. To ensure that the brand responses represent the general population, YouGov weights respondents by age, race, gender, education, income, and geography (region) using U.S. census data. More specifically, the BrandIndex consists of six indicators, which correspond well with Keller's (1993) conceptualization of brand equity (especially the brand favorability dimension):

- Perceived brand quality: "Which of the brands in the sector do you associate with good or poor quality?"
- Perceived brand value: "Which of the brands do you associate with good or poor value-for-money?"
- Perceived brand satisfaction: "Would you identify yourself as a recent satisfied or an unsatisfied customer of any of these brands?"

Table 3
Results for brand and firm level models.

Dependent variable	Cumulative abnormal returns for window $(+1, +5)$					
	M1		M2		M3	
Independent variables	Coeff.	SE	Coeff.	SE	Coeff.	SE
Intercept	0.00	0.01	0.03	0.16	−0.06	0.18
ΔBrand Equity (days 1 to 5 after event)	–	–	10.11***	3.33	11.78***	3.46
Pre-Super Bowl Brand Equity	–	–	−0.08	0.30	−0.35	0.42
ΔBrand Equity * Pre-Super Bowl Brand Equity	–	–	–	–	−54.30**	24.77
Total ad exposure time (sum of seconds) $* 10^2$	−0.01	0.01	−0.02**	0.00	−0.03***	0.00
Expert rating (Kellogg School ADPLAN)	0.13**	0.06	0.14**	0.06	0.15***	0.06
Consumer rating (USA Today ranking)	−0.07*	0.04	−0.05	0.05	−0.05	0.04
Experience (# of ads in previous 10 years)	0.02	0.02	0.00	0.02	−0.02	0.03
No Super Bowl ad in year before	−0.04	0.18	−0.03	0.16	0.08	0.16
Ad spot in half 1	0.25*	0.14	0.24	0.13	0.29**	0.12
Ad spot in half 2	0.05	0.15	0.04	0.14	0.07	0.14
Return on assets	−1.08	1.14	0.34	0.89	1.57	1.06
ln (total assets)	−0.05	0.03	−0.02	0.03	0.00	0.03
U.S. brand	−0.04	0.13	−0.13	0.11	−0.18*	0.10
Random effects						
Firm level: intercept	0.14		0.26		0.68	
Brand level: intercept	0.15		0.00		0.00	
Residuals (assuming AR(1) process): rho	−0.32		−0.40		−0.47	
Model fit						
Loglikelihood	110.06		115.26		118.40	
ΔLoglikelihood	–		5.21**		3.14*	
Wald-Chi2	47.24***		65.83***		48.19***	
R^2	0.17		0.29		0.34	
ΔR^2	–		0.12		0.04	
Adjusted R^2	0.01		0.12		0.16	
ΔAdjusted R^2	–		0.13		0.04	
VIF_{max}	2.88		3.00		3.14	
N_{firms}	24		24		24	
N_{brands}	33		33		33	
N_{years}	5		5		5	
N_{obs}	62		62		62	

Note: All coefficients in M1–M3 are multiplied by 10, except for "Total ad exposure time" ($*100$), firm level intercept ($*10^9$) and brand level intercept ($*10^9$).
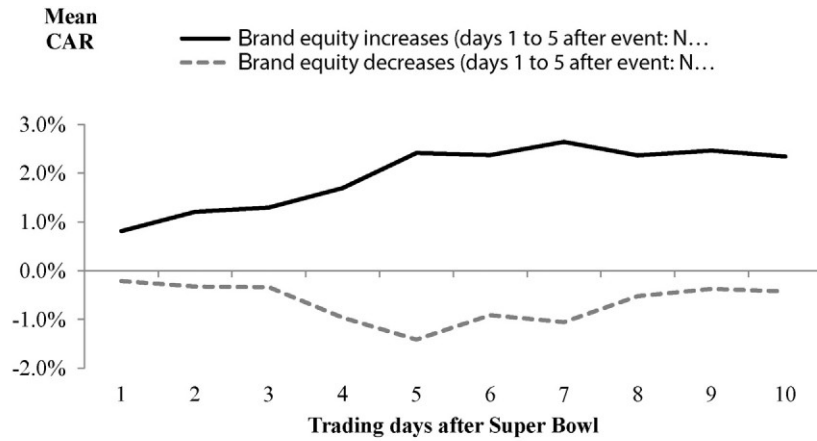*** $p < 0.01$.
** $p < 0.05$.
* $p < 0.10$.

Fig. 2. Mean CAR evolvement after Super Bowl Note: Brand equity aggregated on a firm level for firms with multiple brands at the same Super Bowl.

- *Perceived brand recommendation:* "Which brands would you recommend to a friend? Or suggest avoiding?"
- *Perceived brand affect:* "For which brands do you have a 'generally positive' or 'generally negative' feeling?"
- *Perceived brand work place-reputation:* "Which of the brands would you be proud/embarrassed to work for?"

Until 2012, YouGov has collected the data in the following manner. First, for a given industry sector, the respondents select all brands for which they agree to the positive question (e.g., good brand quality). Then, they select all brands for which they agree to the negative question (e.g., poor brand quality). YouGov treats the rest of the brands as neutral. Hence, for each brand, three responses are possible: positive, negative, and neutral. The authors can control for brand competition effects, because respondents rate the competing brands within one sector simultaneously. Further, to reduce common method bias, YouGov measures the brand perception indicators independently across respondents. That is, they ask each respondent about her perception of only one brand indicator for a particular sector, not all six brand indicators for the same industry. In this manner, YouGov randomizes the indicator–industry combination. For each of the six indicators, the authors calculate the raw rating scores by taking the differences of the number of respondents who agree with the positive judgments

and the number of respondents who agree with the negative judgments divided by the total number of respondents (=number of positive + negative + neutral respondents). Next, the authors use the average of these six brand rating scores as measure for overall customer-based brand equity. The authors use ten days (t-10, t-1) prior to Super Bowl Sunday to calculate the pre-event brand equity scores (*Pre-Super Bowl Brand Equity Level*). Then, the authors analyze changes in brand perception scores up to five days (one week) after the Super Bowl, because the maximum impact of Super Bowl ads on brand perceptions may take some days (e.g., due to word-of-mouth, social media, ad reviews on TV). In order to rule out any competition specific effects, the authors adjust scores by non-Super Bowl advertiser industry-means.

YouGov provides data for all available U.S. brands surveyed between January 1, 2008 and December, 2012. (YouGov has started to collect the data in 2008 but changed data collection procedures in 2013.) Thus, the sample covers five Super Bowl events. By matching YouGov's database with the Super Bowl advertiser data, the authors obtain an initial sample of 121 observations for the Super Bowls 2008 through 2012.

In a second step, the authors identify 24 unique brands that belong to publicly listed firms whose stocks are traded on U.S. stock exchanges. The authors exclude some observations because significant firm events (e.g., announcements of quarterly earnings) occurred around the event day that would bias the results. Because some brands appear in Super
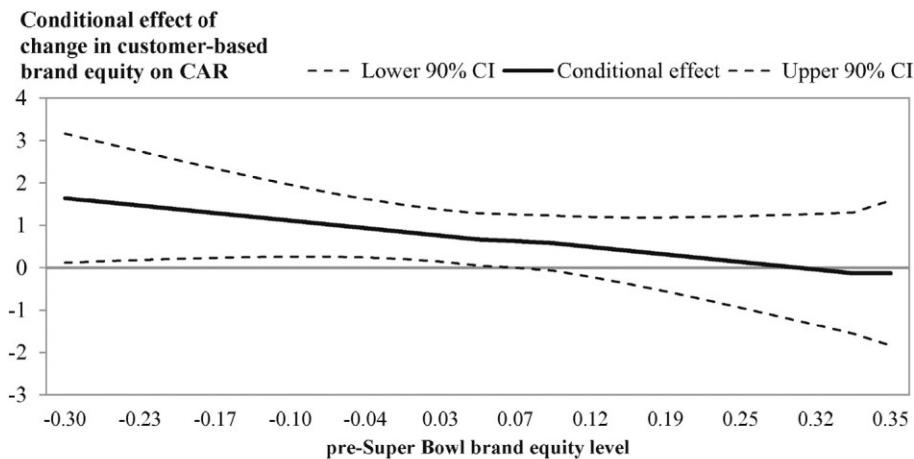
Fig. 3. Effect of changes in brand equity on CARs depending on prior brand equity level Note: Negative (positive) pre-Super Bowl brand equity levels imply brands have brand equity below (above) industry mean.

Bowls during multiple years, the authors obtain 62 observations on a brand level. The firm-level sample consists of 49 observations, as some firms advertise more than one brand (e.g., Pepsi advertises Pepsi Max, Gatorade and Doritos). This study uses the Center for Research in Security Prices' (CRSP) stock returns, available through Wharton Research Data Service (WRDS), to estimate the ARs for the trading days −5 to +10 around the Super Bowl and calculate CARs for various windows (see Table 1).

Following prior research (e.g., Li, 2010), the authors apply several established control variables and add a few additional variables:

Expert panel rating. The authors use Kellogg School's ADPLAN rating as the expert rating of ad quality. MBA students at the Kellogg School of business use the ADPLAN criteria (Attention, Distinction, Positioning, Linkage, Amplification, and Net Equity) to evaluate ads from a strategic perspective during an annual Super Bowl Advertising Review.

Consumer rating. The authors use the USA Today Super Bowl Ad Meter to assess the ad likeability from a consumer perspective. Ad Meter is USA Today newspaper's annual consumer survey of television commercials taken in a live poll during the Super Bowl.

Total ad exposure time. This variable measures the sum of seconds a particular brand is advertised during a Super Bowl. Spots last usually 30, 45, or 60 s. Some brands show more than one ad during a single event.

Ad spot in half 1. Dummy that measures whether ads appear during the first half.

Ad spot in half 2. Dummy that measures whether ads appear during the second half.

No Super Bowl ad in year before. Dummy that controls for potential carry over effects if a brand was advertised during the Super Bowl in the year before.

Experience. Number of Super Bowl ads in the previous 10 years. This variable controls for the effect that advertisers might benefit from their experience in designing Super Bowl ads.

U.S. brand. Dummy that controls for potential country-of-origin effects and measures whether the advertised brand comes from a firm headquartered in the U.S.

Return on assets. The authors use return on assets as measure for profitability (Thomson Reuters Datastream).

ln(total assets). The authors use the natural log of total assets ln(total assets) (Thomson Reuters Datastream).

3.2. Results

Table 1 shows the ARs for various days and event windows. Overall, in line with prior research findings (e.g., Chang et al., 2009; Eastman et al., 2010), results do not provide a clear, compelling case for any general substantial effect of Super Bowl ads on stock returns. Applying the most widely used standardized methods (the Patell (1976) t-statistic and its extension, the Boehmer, Musumeci, Poulsen t-statistic (Boehmer, Musumeci, & Poulsen, 1991), the authors do not find significant positive stock returns for any single event day after the Super Bowl. However, when aggregating the average returns across the time windows (−1 + 5), (−1,+10), (+1,+5), and (+1,+10), the authors do find some weak evidence for positive CARs (p < 0.10). Table 2 reports descriptive statistics and correlations for all model variables. The correlation between CAR(+1,+5) and change in brand equity is significantly positive (0.42; p < 0.01). Table 3 reports the results of three multilevel models. Model 1 (M1) represents results with controls only, M2 shows the results with the ΔBrand Equity covariate, and M3 shows the results including the interaction term ΔBrand Equity ∗ Pre-Super Bowl Brand Equity Level.

Focusing on the hypothesized customer-based brand equity effects, results show that a majority, but not all firms, is able to enhance brand equity through Super Bowl ads. On a firm level, 31 (18) firms increased (decreased) average brand equity. If the authors split the observations by brand equity changes, they find positive (negative) CARs for

firms with increasing (decreasing) brand equity after the Super Bowl (see Fig. 2). Controlling for outliers, the authors also study the median CARs for each group. Results are in line with mean CARs suggesting that outlier influence is not of concern. The inclusion of the brand equity covariate into the multilevel model improves adjusted R^2 by 13% and significantly increases model fit (p < 0.05; see Table 3). The coefficient of the change in brand equity variable is significantly positive: 10.11 (M2 in Table 3; p < 0.01) respectively 11.78 (M3 in Table 3; p < 0.01).

The authors also test alternative model specifications and estimation approaches. Given the limited sample size, the authors combine the multilevel model with a more conservative approach and control for the influence of multivariate outliers by limiting the weight of such outliers (Kennedy, 2003; Tatikonda & Montoya-Weiss, 2001). Concretely, the authors first estimate robust regressions to obtain weights which the authors use to weight observations during subsequent multilevel estimations. The authors also test a standard linear regression model assuming a non-nested data structure. Furthermore, the authors test several models with a restricted number of, if any, control variables, as well as with varying time windows for CAR. Finally, the authors estimate models with a binary brand equity variable and find again that positive (negative) brand equity changes induced by Super Bowl ads are associated with positive (negative) CARs. In essence, this multitude of alterations produces results that support the results introduced above, suggesting robustness of empirical findings. In general, these results support hypothesis H1: only ads that enhance brand equity have a positive impact on stock returns.

In line with H2, the authors find a significantly negative coefficient for the interaction term (M3 in Table 3; −54.30; p < 0.05). This finding means that the impact of ΔBrand Equity on abnormal stock return is smaller for high equity brands and larger for low equity brands. Additionally, the authors apply the Johnson–Neyman technique to visualize this significant interaction term. Based on this spotlight analysis for all possible values of the moderator ("floodlight analysis," Hayes, 2013; Spiller, Fitzsimons, Lynch, & McClelland, 2013), Fig. 3 shows the conditional effect of ΔBrand Equity on CAR as a function of Pre-Super Bowl Brand Equity Level. The negative slope of this curve implies that with increasing (decreasing) pre-Super Bowl brand equity level the benefits attributed to the changes in brand equity become smaller (larger). Furthermore, the plotted 90% confidence interval reveals that only for low equity brands (range −0.30 to 0.07) changes in customer-based brand equity have a significant impact on abnormal stock returns while for high equity brands (range 0.07 to 0.35) this effect becomes insignificant.

4. Discussion and conclusion

Recent research suggests that a large amount of top U.S. sports advertisers is inefficient in their media spending (Brown & Cheong, 2013). This study's findings suggest that Super Bowl ads can be worth the large investment ($4.5 million for a 30 second spot as of 2015), but only if they enhance customer-based brand equity ratings of consumers. When a Super Bowl ad enhances customer-based brand equity, the likelihood increases for a positive effect on stock price. This study highlights the mechanism behind this effect. Super Bowl ads that positively impact brand equity, enhance customer equity and, in turn, provide a boost to the stock price. This study's findings imply a compelling proof of concept for the marketing productivity chain (Rust, Ambler, et al., 2004). Further, empirical evidence suggests that high equity brands are subject to a ceiling effect (e.g., Ehrenberg, 2000; Sharp, 2010; Slotegraaf & Pauwels, 2008) while low equity brands can expect larger long-term benefits on performance provided that Super Bowl ads enhanced customer-based brand equity. These findings augment prior research examining the brand equity-customer equity link (e.g., Leone et al., 2006) and underline the limitation of financial-oriented customer lifetime value models neglecting the roles of

customer preferences, attitudes, perceptions, and expectations (Hogan et al., 2002; Kumar & Umashankar, 2012; Rust, Lemon, et al., 2004).

These findings also have significant managerial implications. Super Bowl ads that successfully change the consumer mindset by building positive brand associations lead to improved cash flows and, ultimately, an increase in stock prices. Empirical results indicate that advertisers should avoid excessive focus on popular ad likeability measures. While high ratings by consumer panels, such as the USA Today Ad Meter, may satisfy advertisers, this study's results suggest that marketing metrics which measure actual brand equity effects more accurately are likely to be much more important for advertisers. While ad likeability is one contributing component to overall brand perceptions upon seeing an ad, ad likeability appears to be just one of several components, and perhaps not a key contributor to overall brand equity ratings.

In summary, Super Bowl ads are not necessarily a waste of money. Quite the contrary, Super Bowl ads that increase customer-based brand equity have the potential to provide significant return on investment. These findings hopefully stimulate further research about the brand value and marketing productivity chain as well as more appropriate marketing performance measures.

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