**BARIS DEPECIK**

# Revitalizing Brands and Brand Portfolios

**Essays on Brand and Brand Portfolio Management Strategies**

# REVITALIZING

# BRANDS AND BRAND PORTFOLIOS

Essays on Brand and Brand Portfolio Management

Strategies

# REVITALIZING BRANDS AND BRAND PORTFOLIOS

Essays on Brand and Brand Portfolio Management Strategies

Revitalisering van merken en merkenportfolio's
Essays over merken en merkenportfolio management strategieën

**Thesis**

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by
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To my family

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Ankara, 2016

Baris Depecik

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# Chapter 1

# Introduction

*"I wish they were SKUs. It's really 1,600 brands. Most of them you've never heard of… It takes a lot of resources… That brand may have had a viable position 15 years ago, but not today…Some we will try and fold into a power brand. That is one way of doing it. Another way of doing it is just letting it fade away and see where it stops. And some may be disposed of.*

*What we're doing is not so much the paring of the brands. We're selecting the brands we see as future winners…Some of them will be very large brands... By concentrating all the efforts we have [against] selective brands, we expect them to accelerate in growth. By concentrating the resources there, where it matters and where the return is the highest, it will allow us to operate more effectively and efficiently"*

*Anthony Bergmans, Unilever Chairman (when asked about 'Power Brands' strategy)*

How should consumer products manufacturers and retailers keep their portfolio of brand offerings relevant and energetic when large numbers of new brands are continuously launched into a world of increasingly nonloyal customers with evolving needs? The harsh reality is, at a time when the demise of old brands has accelerated and even established brands are vulnerable, it stands to be a great deal of challenge. Fortunately, a number of brand and brand portfolio management strategies, if crafted well with a good understanding of brands' roles and their relationship with each other, can add relevance and energy to brands and brand portfolios (Aaker,

2004). Over the last decade, several firms have implemented these strategies in an attempt to energize their brands and rework their brand portfolios. Unilever, for example, launched a 'Power Brands' strategy under which it restructured its brand portfolio to support and renovate a small set of selected power brands and to encourage customers to migrate from weak brands to the power brands (Pierce & Moukanas, 2002).

One commonly utilized strategy for keeping brand portfolios strong, fresh, and relevant is pruning them through brand divestitures. The divestiture of a brand releases resources, which can be reallocated to retained brands to make them stronger and more competitive. When executed systematically and methodically, a brand divestiture has the ability to increase sales and profitability through increasing focus and generating greater economies of scale (Kumar, 2003). Accordingly, brand divestitures are often viewed as bit of a savior for firms that struggle with scale inefficiencies resulted from the complexities of managing proliferated brand portfolios. Brand divestitures, however, should not be regarded as a sure-win strategy as it brings risks along with them. For example, retained brands may fail to claim the sales of divested brands or may be unsuccessful to deliver on their promises despite increased focus and support. Unmet performance goals may result in stressful relations with shareholders impatient for returns. Therefore, in order to maximize the benefits and eliminate the risks, it is imperative to thoroughly understand how brand divestitures benefit individual brands and how they influence the firm performance overall.

Next to eliminating underperforming brand offerings, achieving relevant and powerful brand portfolios also involves energizing retained brands in the portfolio. While almost all brands could benefit from some support, some established brands, especially the ones in mature and low involvement product categories, may struggle with generating energy. A very effective brand portfolio management strategy to revitalize these brands is

to exploit external brand energizers such as sponsorships and endorsers (Aaker, 2004). These energizers can be used to receive exposure, build awareness, generate interest, create and deliver emotional and self-expressive benefits. A pertinent question for firms investing in these brand energizers is that, considering their increasing costs, whether they also trigger sales and profits (e.g., Chung, Derdenger, & Srinivasan, 2013).

The growing need for, and the strategic importance of, revitalizing brands and brand portfolios to maintain growth in proliferating, ever-changing, and increasingly competitive environments call for a profound understanding of the key considerations involved in the successful implementation of a 'revitalization' strategy. This dissertation, accordingly, aims to bring a better understanding of some of the most commonly utilized revitalization strategies, outcomes of those strategies, and the factors which influence the outcomes.

## 1.1    Overview of This Dissertation

In the chapters that follow, I focus on the aforementioned revitalization strategies utilized by consumer products manufacturers and retailers to energize their portfolio of brand offerings. In Chapter 2 and Chapter 3, strategies involving simplification of brand offerings are at the center of interest. Chapter 4 departs from these chapters in that it focuses on sponsorship, a widely utilized external brand energizer.

Although all three chapters are related to each other as they all fall under the common theme of 'brand and brand portfolio revitalization strategies', each chapter is presented as a stand-alone research paper and can be read independently. Below, I briefly introduce each of the chapters included in this dissertation.

Chapter 2 focuses on a particular form of brand divestment: the sale of brand assets within a brand portfolio rationalization (BPR) program. This form of brand divestments is

undertaken to release resources and reallocate them to advance retained brands in the portfolio. Two common motives for such brand divestitures –global branding and refocusing on core businesses– are integrated in a single common framework to examine the effects of divesting local/regional/global brands in core businesses and local/regional/global brands in non-core businesses on firm value. Analysis of 205 divestment announcements in the global food and beverages industry shows that, in most cases, brand divestments hurt firm value. Only when firms divest local or regional brands in non-core businesses is the effect on firm value positive.

Chapter 3 focuses on the removal of a brand from a market either by a manufacturer or a retailer, to which is referred as 'brand exit' throughout the text. The increasing frequency of brand exits raises two questions pertinent for both manufacturers and retailers: When a brand disappears from the market, (1) what brands are better positioned to benefit from the exit? and (2) what marketing efforts influence the realignment of sales after the exit? To answer these questions, a dynamic brand sales response model is developed. The model allows for examination of the long-term effects of a brand exit on sales and identification of the drivers of excess demand redistribution following the exit. I apply the model to 96 brand exit events and analyze the sales response of 555 incumbent brands across 2 repeat-purchase product categories. Results indicate that the market shares of a deleted and an incumbent brand, and the incumbent brand's similarity to the deleted brand on a multidimensional attribute space explain variations in sales response to exits across brands. Results further reveal what underlying product attributes are most critical in attracting consumers of the deleted brand in each category. Analyzing what marketing efforts influence the realignment of sales after the exit, two post-exit marketing strategies – increasing an incumbent brand's product alternatives in the market and non-price

promotion frequency– are found to be effective in picking up the sales of the deleted brand. The implications of these findings for managers of manufacturers and retailers on how to better manage their brand/product portfolios and marketing efforts in the aftermath of brand exits are also discussed to conclude this chapter.

Chapter 4 focuses on sponsorships as a way to energize established brands in mature product categories. Specifically, the main research question addressed in this study is how a partnership between a brand and a major sports franchise affects the sales performance of the partnering brand, other brands of the sponsoring firm, and competing brands within the corresponding product category. A dynamic linear model of brand sales is developed and applied to partnership deals between beer brands and National Football League franchises. The results indicate that a sponsored brand experiences a gain in baseline sales and an increased effectiveness for its sales promotion instruments. The magnitudes of the effects are contingent on team performance. The results also show that a sponsorship generates brand switching from competitors including competing brands of the sponsoring firm.

Chapter 5 summarizes the scientific and managerial relevance of each research included in this dissertation, reviews their main findings, highlights their implications for research and practice, and suggests avenues for future research.

## 1.2   Declaration of Contribution

The research presented in chapter 2 was conducted with Yvonne van Everdingen and Gerrit van Bruggen. It was published in the *Global Strategy Journal.* The research presented in Chapter 3 was conducted with Berk Ataman and Chapter 4 was conducted with Gerrit van

Bruggen. Overall, I have done the majority of the work in all chapters. I received valuable feedback on all steps from Gerrit van Bruggen, Yvonne van Evedingen, and Berk Ataman.

# Chapter 2

# Firm Value Effects of Brand Divestitures[1]

<span style="font-size:3em">M</span>any multi-national enterprises (MNEs) operating in the consumer packaged goods (CPG) industry, such as Unilever, Procter & Gamble, Nestle, and Diageo, own brand portfolios that span multiple country and industry markets. Starting around the early 1990s, these companies expanded their portfolios through acquisitions and new brand introductions in multiple geographies and industries. This was done to generate growth by reaching almost anyone around the globe. It led to a profusion of brands, most of them regional or national, with many brands making only a small contribution to companies' bottom lines. For example, Unilever managed a portfolio of 1,600 brands in 1999, with 80 percent of these brands generating less than 10 percent of their profits (Kumar, 2003).

From a management's viewpoint, the proliferation of brands led to high costs and managerial complexity (Hill, Ettenson, & Tyson, 2005). Furthermore, it brought other ills,

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[1] This chapter was published in the Global Strategy Journal: Depecik, B., Everdingen, Y. M., & Bruggen, G. H. (2014). Firm Value Effects of Global, Regional, and Local Brand Divestments in Core and Non‑Core Businesses. *Global Strategy Journal*, *4*(2), 143‑160

like inefficiencies in production, distribution, and marketing (Knudsen, Finskud, Törnblom, & Hogna, 1997; Laforet & Saunders, 1999). The troubles of supersizing brand portfolios were further exacerbated by a variety of retailer-related factors. The rise of private label brands, difficulties in getting supermarket shelf space, and growing retailer power promoted the need for a small set of strong brands rather than a larger set of smaller ones. Pulling back from gains achieved in the previous years, starting around the mid-1990s, many firms realized the undesired consequences of the proliferation of their brand portfolios and started Brand Portfolio Rationalization (BPR) programs. A BPR program contains detailed plans to divest particular brands from the brand portfolio in order to release resources and reallocate these to meet the needs of the remaining brands in the portfolio (Aaker, 2004).

Companies followed different strategies in divesting brands leading to diverse outcomes. P&G, for example, deleted several food and beverage brands to strengthen its focus on personal care and healthcare brands. An increased focus on laundry, baby care, hair care, and feminine protection brands let the company become the global leader in all of these four businesses (P&G, 2003; USA Today, 2006). P&G's growth from the brands they kept outweighed the revenue losses from divested brands and as a result the company experienced both top- and bottom-line growth (P&G, 2004). In contrast with P&G's strategy of shifting focus across industries, Unilever shifted its focus toward the top brands in its portfolio. Unilever divested nearly 1200 brands to enhance its resources behind a core portfolio of 400 brands. The divested brands were relatively small within the overall portfolio in terms of revenues, were available only in a few country markets, and had a small customer base. Most of the retained top brands, e.g., Knorr soup, Calvin Klein perfumes, Dove soap, and Magnum ice cream, had a strong international presence. The

five-year makeover resulted in increased brand focus, improved global buying, cost savings, and debt reduction. Yet, it failed to deliver on its promises in terms of revenues and shareholder value (Unilever, 2004).

These and other brand divestment examples with diverse outcomes made the uncertainty about the value-creating effects of different types of focus-increasing brand divestiture strategies grow. The objective of the study reported in this paper is to empirically investigate the effects of two types of focus-increasing brand divestitures (i.e., focus on core industries vs. focus on core, global brands) on firm value.

Findings in two different research fields are relevant for our study. First, the divestment literature discusses divestitures of non-core business assets (not specifically brand assets though) to overcome problems of over-diversification (Haynes, Thompson, & Wright, 2002) and to release resources to reinforce core assets. It shows the firm value enhancing effect of these divestitures (Desai & Jain, 1999; John & Ofek, 1995). Although this type of divestment is in line with the P&G example discussed above, so far the emphasis in these studies has been on tangible assets. In our study we focus on brands as intangible assets. Second, the international branding literature suggests the potential, mainly financial, advantages of deleting local brands and subsequently enhancing released resources behind a few core, global brands (Kapferer, 2002; Schuiling & Kapferer, 2004). This is the strategy outlined in the Unilever case above. So far, this literature fails to provide empirical evidence of possible firm value-enhancing effects.

We contribute to the international business literature by empirically investigating brand divestitures from a multidisciplinary perspective. We integrate the effects of the two focus-increasing strategies, i.e., to refocus on core businesses ('the P&G approach') and the global branding strategy ('the Unilever approach'), into a single common framework.

(Meyer, 2006; Meyer, 2009) argues that both forces are simultaneously redesigning conglomerates' business activities, and discusses the potential benefits of switching to a so-called 'global-focusing' strategy. However, so far no empirical evidence exists on the potential positive effects of this strategy on the firm value. Our study addresses this gap, and argues that the value-creating effects of brand divestitures depend on the divested brand's industry relatedness (i.e., the relatedness of the brand to the primary or core business activities of the company) and geographical scope (i.e., the geographical reach of the brand in terms of country markets). We distinguish four types of brand divestitures, i.e., divesting (1) a local brand in a non-core industry, (2) a local brand in the core industry, (3) a global brand in a non-core industry, and finally a (4) global brand in a core industry.

To investigate the effects of these four types of brand divestments on firm value, we conducted an event study, i.e., a method that investigates whether the announcement of an event –in this study the sale of a brand asset within the context of a BPR program– creates an abnormal change in the firm's stock price and hence the firm value. The stock price is a forward-looking variable that reflects the present value of all current and projected earnings of the company. Any abnormal change in the stock price reflects the effect of the event on firm value. Our empirical findings provide evidence for our multidisciplinary perspective in studying the effect of brand divestments, which helps to understand how and why brand divestments affect firm value.

The remainder of this paper is organized as follows. The next section presents our research framework, followed by hypothesis development. Subsequently, we describe the event study methodology and our data collection procedure. After presenting the results, we conclude with a discussion of the implications and areas for further research.

## 2.1 Research Framework

### 2.1.1 Divestiture research

Research on divestitures focuses mainly on two research questions: (1) what are the determinants of firm divestitures, and (2) what are the implications of these divestitures. To investigate these questions, this research stream has adopted a variety of perspectives, such as the industrial organization, the financial-accounting, and the corporate portfolio approach (see Hamilton & Chow, 1993). The industrial organization approach considers a divestment activity as a rational response to changing dynamics of the general economic environment or the industry, such as divestments due to a permanent decrease in demand, low profits, or the entry of an aggressive competitor (Siegfried & Evans, 1994). Financial-accounting studies focus on the effects of divestments on the financial position of the firm, such as its profitability (see Haynes et al., 2002), or shareholder wealth (Hite & Owers, 1983). Finally, corporate strategy scholars investigate how divestitures change the configuration of a firm's business portfolio (Brauer, 2006). Taken together, a diverse set of approaches spanning multiple levels of analysis (e.g., macro, industry, or firm) have been used to develop insights into the multidisciplinary characteristics of divestments. The adopted perspective is often based on the motives for the divestment activity and the relevant level of analysis. In line with the recent shift in interest toward the firm level rather than the macro or industry level (Brauer, 2006), this paper builds on the corporate portfolio approach in investigating the effects of brand divestitures on shareholder wealth for firms with large brand portfolios.

*2.1.2 The portfolio approach*

Companies can be viewed as portfolios of assets, products, and activities (Benito, 2005), and within these portfolios, business units compete with one another for resources. As a consequence, firms should systematically review their portfolios from both a strategic and a financial perspective (Hamilton & Chow, 1993), and subsequently reallocate resources between businesses to match changing business/market opportunities, build new competitive advantages (Prahalad & Hamel, 1994), and improve the effectiveness of their resources (Kogut & Zander, 1992).

We can easily apply the corporate portfolio approach to brand portfolios for the following reasons. First, many corporations offer multiple brands within the same product category (Lei, Dawar, & Lemmink, 2008) to serve different customer segments (Keller, 2000). Therefore, they own and manage brand portfolios consisting of multiple brands (Aaker, 2004; Laforet & Saunders, 1999; Morgan & Rego, 2009). Second, in many cases, brand divestitures are undertaken as part of a BPR program, also called a portfolio restructuring strategy. The divestiture of a brand releases resources, which can be reallocated to the retained brands to improve their performance (Varadarajan, DeFanti, & Busch, 2006).

*2.1.3 Brand characteristics and divestment motives*

Within brand portfolios, firms own a variety of brands that are offered in different industries and in different geographical markets (Douglas, Craig, & Nijssen, 2001). These brands can be characterized along two dimensions: (1) the industry relatedness of the brand (see Y-axis in Figure 1), and (2) the geographical scope of the brand (see X-axis in Figure 1). Figure 1 graphically presents the research framework of our study.

**Figure 1: Characteristics of divested brands and motives for brand divestments**
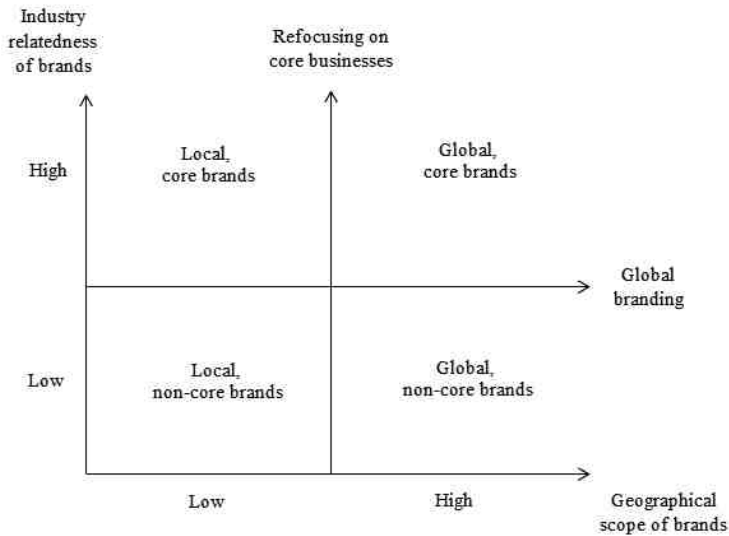


The industry relatedness of a brand refers to the relatedness of a brand's product line to the primary business activities of a company. Our conceptual definition of a brand's industry relatedness is based on the notion of core businesses in the diversification and strategy literature. The largest, strategically most important business of the firm is referred to as its core business (Bowen & Wiersema, 2005). Due to several factors, such as managerial motives, increasing market power, or transferring underused resources to new businesses (Montgomery, 1994), firms might move into new businesses and follow different methods in how they leverage their core skills into new markets. In the diversification literature, expansion into markets related to firm's present core activities and skills is often referred to as related diversification, whereas expansion into markets unrelated to firm's previous activities is referred to as unrelated diversification (Rumelt, 1974). Relatedness has been discussed in the literature mainly at discrete levels by using

concepts such as 'core' and 'non-core.' Operationally, it is defined by 4-digit Standard Industrial Classification (SIC) codes of the business in which the company has the largest percentage of its sales (e.g., Chatterjee & Wernerfelt, 1991). The distance of a business from the core business is typically defined by the similarity between the SIC code of the core business and that of the business in question. Relatedness is higher (lower) when two businesses share higher (lower) number of digits in their SIC codes (Caves, Porter, & Spence, 1980).

A brand's geographical scope refers to its geographical reach in terms of country markets. Various levels of geographical scope (i.e., local, regional, and global) can be distinguished. Global brands are marketed under the same name in multiple countries, with generally similar and centrally coordinated marketing strategies (Yip, 1989). Brands that are marketed in only one or a few country markets in a particular region are referred to as local and regional brands respectively (Wolfe, 1991). Local brands have a low geographical scope, while global brands have a high geographical scope.

The decision to delete a particular brand may stem from various divestment motives, such as poor performance of a business unit (Duhaime & Grant, 1984) exiting declining industries (Davis, 1974; Harrigan, 1980), the entry of new competitors (Siegfried & Evans, 1994), competition in home markets (Hutzschenreuter & Gröne, 2009), and the necessity of meeting corporate liquidity requirements (Ofek, 1993). Refocusing on core businesses appears to be the most common motive (Hoskisson & Johnson, 1992; Kaplan & Weisbach, 1992). Firms experiencing performance declines usually adopt a 'refocus on the core business' strategy (John, Lang, & Netter, 1992). This is also prevalent in the CPG industry, where many firms lost their focus and have experienced performance declines (Kumar, 2003). In the international branding literature, the adoption of global branding strategies

and the development of international brand portfolios have been mentioned as the most important motive for why MNEs have been slimming down their brand portfolios (e.g., Aaker & Joachimsthaler, 2000; Schuiling & Kapferer, 2004). Summarizing the above, we consider two main motives why companies divest brands, i.e., (1) to refocus on core businesses (e.g., the P&G case), and (2) to build (strong) global brands (e.g., the Unilever case). In Figure 1 we present these two divestment motives and their relationship with the brand characteristic dimensions graphically, resulting in four possible brand divestment options.

*2.1.4 Brand divestment options*

We expect brands in the upper right quadrant of Figure 1, i.e., global, core brands, to be the least likely ones to be divested, but it sometimes happens. For example, Diageo, the world's largest spirits company, sold Cinzano, the world's second best-selling global vermouth brand behind Martini, to the Campari Group. This was done to reverse a downward trend in the sales of their key brands such as Smirnoff vodka and Gordon's gin.

Another, more likely, option is to divest local, non-core brands (see Figure 1, lower left quadrant). An example of such a case is the sales of Ambrosia, a rice-pudding brand that has a particular appeal to UK consumers, by Unilever. Similarly, H.J. Heinz Company, famous for its ketchup brand, sold its profitable but local and non-core ice-cream brand Tip Top in New Zealand.

Interesting situations arise when the two strategic motives do not coincide. In order to focus on core businesses, companies may divest their non-core brands even if these have high international presence and geographical scope (i.e., brands in the lower right quadrant of Figure 1). For example, P&G recently completed its attempt to quit the food

and beverage industry by divesting its truly global Pringles snacks brand in order to focus on their core beauty and personal care businesses. Similarly, companies may divest brands in their core businesses to increase focus on their global brands (i.e., brands in the upper left quadrant in Figure 1). For example, during the last decade Diageo divested many of its local brewery and whiskey brands. These brands were strong in their home markets but not travelling well across national boundaries. These sales allowed them to concentrate their resources on their global brands like Guinness beer or Johnnie Walker whiskey.

In this article we study the firm value effects of divesting brands from each of the four quadrants in Figure 1. In the next section we develop hypotheses for these effects.

## 2.2 Hypotheses

### 2.2.1 The value relevance of brands

Branding and brand portfolio management strategies are important for firm value. Particularly for firms operating in the CPG industry the management of brand portfolios is an integral part of the execution of their marketing strategies (Aaker, 2004). Brands are recognized as intangible assets that have an effect on firm performance (e.g., Ailawadi, Lehmann, & Neslin, 2003; Barth, Clement, Foster, & Kasznik, 1998; Kallapur & Kwan, 2004). Brand portfolio characteristics, such as the number of brands in the portfolio and the competition and relatedness between these brands, also influence firm performance (Morgan & Rego, 2009).

Bahadir, Bharadwaj, and Srivastava (2008) show that, in the context of mergers and acquisitions, in case a firm considers selling brand assets, the transaction value of these assets may be higher than the value-in-use. The difference between these values depends

on the brand portfolio diversity and marketing capabilities of both the acquirer and the seller. If a brand has a better fit with the brand portfolio and activities of the acquiring company, the value of the brand is enhanced within the new brand portfolio and such divergent valuations between the seller and buyer present opportunities for firm value gains for both parties. The divestiture of a brand also releases resources, which can be reallocated to the retained brands to improve their performance (Varadarajan et al., 2006). The alternative allocation of released resources such as launching new brands, enhancing core brands, or expanding the reach of global brands may lead to (increased) growth (Carlotti, Coe, & Perry, 2004).

We will now link the four brand divestiture options to firm value and argue that the value-creating effects of divestitures depend on the divested brands' industry relatedness and geographical scope.

*2.2.2 The divestment of brands with low industry relatedness and low geographical scope*

Caused by merger and acquisition activities, many corporations have experienced diversification in their operating businesses. Many MNEs extended their product range from their core businesses to other related but also unrelated businesses. Empirical studies in the strategic management literature provide evidence for negative effects of over-diversification on firm value (e.g., Lang & Stulz, 1993). This is because at some point the marginal costs of diversification exceed the benefits (Montgomery & Wernerfelt, 1988). Diversification then no longer improves firm performance, but creates problems of managing an overlarge set of business activities (Markides, 1995). In such cases, economies of scale and scope can be achieved through asset reduction, i.e., removing units, or in our case brands, in unrelated businesses to increase the focus on core operations again. This

type of restructuring is associated with an increase in the firm's profitability (Markides, 1995), and enhanced firm value (Desai & Jain, 1999; John & Ofek, 1995). In line with these considerations we expect that such firm value enhancing effects also apply to divesting non-core brand assets.

MNEs not only operate in multiple industries, but generally also follow a multi-tier branding strategy, i.e., they market both local and global brands. This is especially common when companies face difficulties in reaching price sensitive segments of the market (Schuh, 2007). A multi-tier branding strategy allows them to enjoy higher profit margins by simultaneously targeting premium segments with their global brands and by better satisfying fragmented consumer needs with local brands. However, offering (too) many brands also increases manufacturing costs (Hill et al., 2005) and marketing expenditures (Ehrenberg, Goodhardt, & Barwise, 1990), and it may dilute brand loyalty (Bawa, Landwehr, & Krishna, 1989). The proliferation of brands also causes difficulties in managing brands in a coordinated way (Kumar, 2003). As the number of brands in the portfolio increases, investment and resource allocation decisions between brands becomes a tedious task, which might lead to a lack of support on smaller, non-core brands by top management talent. Given these considerations, firms adopt global branding strategies by changing the mix of their brand offerings in favor of global ones (Aaker & Joachimsthaler, 2000; Douglas et al., 2001; Schuiling & Kapferer, 2004; Steenkamp & de Jong, 2010). Following such a global branding strategy fosters firms' intentions to divest brands with a lower geographical reach and invest released resources in enhancing global ones. Shifting towards global brands entails several cost-side benefits. It leads to savings in packaging and communication costs, and it provides economies of scale due to the standardization of

product platforms and marketing and communication strategies (Kapferer, 2002; Steenkamp, Batra, & Alden, 2003).

Divesting local brands in favor of global brands is also in line with consumer responses to local and global brands. In general consumers pick global brands, because of affective feelings (Dimofte, Johansson, & Ronkainen, 2008) or because these brands are associated with a higher quality, esteem, and prestige (Holt, Quelch, & Taylor, 2004; Johansson & Ronkainen, 2005; Steenkamp et al., 2003). Although Steenkamp & De Jong (2010) have shown that there is considerable heterogeneity in attitudes towards local and global products in the four largest economies, other studies have shown that a huge percentage of their respondents express strong preferences for global brands both in developed and developing countries (Holt et al., 2004; Strizhakova, Coulter, & Price, 2008).

In line with these arguments, we expect that the divestment of brands with a lower geographical scope may lead to a more efficient use of retained brand assets when compared to the divestment of brands with a higher geographical scope. Given the expected firm value enhancing effects of divesting non-core brands as well as local brands, we hypothesize:

Hypothesis 1. Divesting brands with low industry relatedness as well as low geographical scope will be positively related to the firm value.

*2.2.3 The divestment of brands with high industry relatedness and high geographical scope*

The divestment of global, core brands is least likely to occur, because according to the widely advocated global-focus strategy, firms should aim for brand portfolios located in the upper right quadrant of Figure 1 (e.g., Meyer, 2009). Nowadays, the marketplace has been witnessing a proliferation of brands, growing retailer power, and increasing competition of

private labels. Therefore, companies need strong core brands more than ever. A large number of flagship brands within the brand portfolio of many companies are marketed in core businesses. These are important for firms in building up solid customer bases (Aaker, 2012; Keller, 1998) and, therefore, in the development of strong bargaining power in their relationships with retailers (Barwise & Robertson, 1992). Moreover, the removal of brands with high geographical scope will not result in cost advantages, because such brands already have cost advantages as marketing efforts are standardized across countries. In fact, cost-based arguments mostly favor the globalization strategy. We therefore expect that divesting a global brand has negative supply-side consequences for the firm value.

At the demand-side, with the divestiture of any type of brand, firms run the risk of losing the market share of the divested brands, because they may fail to migrate customers to the remaining brands in their portfolio. Also, the retained brands may not be able to deliver higher revenues, covering the loss of demand for the divested brands. This might be especially true for the divestment of global, core brands. By definition the core business is the strategically most important business of the company. Most successful companies, which increase their revenues sustainably and profitably, often have strong core businesses in which they offer their most critical products to the potentially most profitable customers. Superior profitability may also be achieved through high market power and market share dominance in core businesses (Zook & Allen, 2013). Therefore, firm performance is more sensitive to any loss of demand in core businesses as compared to non-core businesses. Also, companies generally have only one or a few global brands within a product category (Varadarajan et al., 2006). Global brands are perceived to be more prestigious (Steenkamp et al., 2003), familiar (Ozsomer, 2007), of higher quality (Holt et al., 2004), and of higher esteem (Johansson & Ronkainen, 2005). As a consequence,

global brands usually target a premium segment with higher profit margins as compared to local brands (Meyer & Tran, 2006), leading to an increase in companies' profit (Kapferer, 2002). Therefore, we argue that firms run a greater risk of losing market share when they divest a global, core brand as compared to a local, non-core brand.

Following the reasoning outlined above we hypothesize:

Hypothesis 2. Divesting brands with high industry relatedness as well as high geographical scope will be negatively related to the firm value.

### 2.2.4 The focus strategies combined

Hypotheses 1 and 2 discuss the consequences of divesting brands that have low (high) scores on both dimensions in our research framework (Figure 1). However, as mentioned before, companies may also divest brands that are scoring high on one of the dimensions, but low on the other, i.e., divesting local, core brands or global, non-core brands. The effects of divesting such brands on firm value are less clear. Divesting a local, core brand brings the cost advantages of divesting a local brand as indicated in the international branding literature, such as savings in packaging and communication costs. At the same time it may negatively influence firm value due to destroying a core brand. Companies generally put a lot of managerial and financial effort in building strong core brands and making consumers loyal to these brands (Aaker, 2012). Destroying such brands will most likely give a negative signal to investors. Whether the cost advantages of divesting a local brand outweigh the disadvantages of divesting a core brand is not clear in advance. The same applies for the divestment of global, non-core brands. As argued above, we expect that divesting a global brand has negative consequences for the firm value, while the divestment of non-core assets are generally found to be firm value-enhancing (John &

Ofek, 1995). We, therefore, refrain from formulating directional hypotheses for the divestment of local, core brands and that of global, non-core brands and will empirically investigate these effects.

## 2.3   Methodology and Data

### 2.3.1 Methodology

A firm's market value is likely to be influenced by a large number of firm specific events and factors with long-run implications, which are difficult to be adequately controlled for in cross-sectional research designs. A brand divestiture is such an event with long-run implications, and therefore, we conducted an event study to analyze the forward looking effects of it. Event studies allow for isolating and individually assessing the value created by events, and has been used regularly in the strategic management literature (see Wright, Chiplin, & Thompson, 1993) as well as in the marketing and branding literature (e.g., Gielens, van de Gucht, Steenkamp, & Dekimpe, 2008; Sood & Tellis, 2009; Wiles, Morgan, & Rego, 2012).

In our study, we investigate the stock price reaction to an announcement of a brand divestiture as part of a BPR program by a firm. The stock price reflects the present value of all current and projected earnings of the company. Any abnormal change in stock price, i.e., the part of the return that is not due to systematic influences, also called abnormal return, is associated with the unanticipated information about an event that comes to the public realm through an announcement. As such, it provides a direct measure for the present value of all expected current and future profits triggered by the event, i.e., the brand divestiture (see Fama, 1970)

Using daily stock prices, a typical event study analysis involves extracting daily abnormal returns (ARs) for a time period around the event dates of interest, aggregation of these ARs over an event window to compute the cumulative abnormal returns (CARs), and running additional regressions to explain cross-sectional variation in the CARs for a sample of events. The next subsections describe the basics of an event study and some design issues in our application. For a more extensive overview of the event study methodology we refer to (Brown & Warner, 1985).

The abnormal return ($AR_{it}$) (see Equation 1) for a security $i$ on day $t$ is expressed as the difference between actual return ($R_{it}$) and the predicted normal return ($E(R_{it})$). The predicted normal return is the return that would be expected if the event had not taken place. Typically, normal returns can be modeled using the market model. Alternative normal return models like multifactor and portfolio models have been proposed (for an extensive discussion of normal return models see Kothari & Warner, 2004). In our study we found that applying such alternative models yield highly similar results to those of the market model and we, therefore, decided to use the latter. The market model relates the expected return to a single factor being the return from a benchmark portfolio ($R_{mt}$) over an estimation period (see Equation 2). As a next step, the individual days' ARs are aggregated over an event window from $t_1$ to $t_2$ to find the CAR (see Equation 3).

$$AR_{it} = R_{it} - E(R_{it}) \qquad (1)$$

$$E(R_{it}) = \alpha_{it} - \beta_i R_{mt} + \varepsilon_{it} \qquad (2)$$

$$CAR_i[t_1, t_2] = \sum_{t=t_1}^{t_2} AR_{it} \qquad (3)$$

Next, the CARs are averaged across N events into a cumulative average abnormal return (CAAR). The significance of the CAARs for different event windows is computed

using the standardized test statistic described by (Patell, 1976). Assuming cross-sectional independence, the test estimates a separate standard error for each event, and each abnormal return is then standardized as follows:

$$s_{AR_{it}}^2 = \frac{\sum_{j=E_1}^{E_2} AR_{ij}^2}{T_i - 2} \left[ 1 + \frac{1}{T_i} + \frac{(R_{mt} - \overline{R_{m,Est}})^2}{\sum_{j=E_1}^{E_2} (R_{mj} - \overline{R_{m,Est}})^2} \right] \qquad (4)$$

$$SAR_{it} = \frac{AR_{it}}{s_{AR_{it}}} \qquad (5)$$

where $T_i$ is the number of days in the estimation window starting at $E_1$ and ending at $E_2$, $\overline{R_{m,Est}}$ is the mean market return over the estimation window.

For each event $i$, we estimated the expected returns for the market model using an estimation period of 255 days (which equals to one trading year), ending 30 days before the event date. We used adjusted share prices as some firms had undergone stock splits between 1995 and 2010. To quantify the market rate of return, we collected index returns. For firms that had their common stocks included in multiple indices, we chose the index registered in the home country of the firm. Stock prices and information on indices were drawn from the Thomson Reuters database.

The choice of an event window is one of the most important design issues in an event study. Including pre-event days in the event window accounts for leakage of information prior to the official announcement, while including post-event dates ensures capturing the delayed impact of the announcement. However, using longer event windows increases the likelihood of confounding events and may lead to biased results. Therefore, we report the CAARs for several different narrow event windows around the event date, namely, (-3,+1), (-3,0), (-2,+1), (-2,0), (-1,+1), (-1,0), and (0,+1). We use parametric (Patell Z test) and non-parametric (Wilcoxon signed-rank test) tests to determine the significance of the CAARs.

*2.3.2. Sample design and descriptive statistics*

The empirical setting of our study is the food and beverage industry. To construct a sample of brand divestiture announcements of multinational enterprises operating in this industry, we followed a stepwise approach: (i) we identified sample firms, (ii) we collected brand asset divestiture announcements for those firms, (iii) we screened the announcements for the objective of the divestment activity, and (iv) we checked for confounding events. Below we describe in detail how we developed our sample.

First, we identified all publicly listed multinational enterprises that appeared in the 2010 list of the Global Food Market Database. This list ranks the top 100 global food groups by their revenues in the food and beverage industry. We then collected announcements of these firms by using the database of Lexis Nexis, which covers a multitude of information sources. Since many corporations started to engage in brand disposal activities in the late 1990s (Kumar, 2003), we started gathering announcements as of 1995 until 2010. Multiple search terms (e.g., sale, sell, sold, disposal, divesture, divestment, deletion, brand, rationalization, portfolio, focus) were used to identify relevant announcements. Afterwards, we scanned all articles to select the ones that included an announcement of brand asset divestitures. We then used Thomson One Banker's M&A Deals Analysis module to confirm that the transaction had actually been enacted. Announcements of pending or cancelled transactions were excluded.

To separate BPR announcements from divestitures with other strategic objectives, we used a similar approach as used by (Byerly, Lamont, & Keasler, 2003; Markides, 1992) to identify restructuring announcements. We screened all announcements for content and selected those that report a brand portfolio restructuring strategy by looking for terms such

as 'refocusing,' 'concentrate on (shifting focus to) core businesses,' 'concentrate on (shifting focus to) core brands,' 'concentrate on (shifting focus to) core markets,' 'concentrate on (shifting focus to) global markets,' or some other wording clearly revealing that the divestment is executed within the context of a BPR program and in order to focus on other brands in the portfolio. Finally, we examined our sample for confounding events and filtered out those with a confounding event from three days before to three days after the announcement. By doing this, we ensured that the stock price reactions could solely be attributed to the announced brand divestitures. This resulted in a sample of 205 BPR announcements.

Next, we classified the 205 events according to the geographic scope and the industry relatedness of the divested brands. In Table 1, we describe the operationalization of these variables. We introduced regional brands as a separate category because for many of the divested brands in our sample it was not possible to classify them as either local or global in an unambiguous way.

**Table 1: List of variables, operationalization, and sources**

| Variable | Levels and operationalization | Sources |
|---|---|---|
| Geographical scope of the divested brand | Local brand: divested brand is present only in one country.<br><br>Regional brand: divested brand is present in multiple countries in one of the three parts (i.e., North America, Europe, Asia-Pacific) of the triad.<br><br>Global brand: divested brand is present in multiple countries in at least two different parts of the triad. | Announcement dataset compiled from Lexis Nexis |
| Industry relatedness of the divested brand | Core business brand: divested unit and divesting company shares a common three digit SIC code.<br><br>Non-core business brand: divested unit and divesting company does not share a common three digit SIC code. | Thomson One Banker M&A Deals Analysis Module, Bureau van Dijk's Orbis database |

To determine the geographical scope of the divested brand, we adopted conceptual and operational definitions similar to those of Townsend, Yeniyurt, & Talay (2009). We classify the divested brand as being: (i) a local brand, (ii) a regional brand, or a (iii) global brand. For all divested brands, we scanned Lexis Nexis to find information regarding the country markets where the divested brands were present. To determine the industry relatedness of the divested brands we compared the Standard Industrial Classification (SIC) codes of the divested units with the primary SIC codes of the divesting companies. This approach is in line with other studies in divestment research (e.g., Doukas & Kan, 2004; Schlingemann, Stulz, & Walkling, 2002). We distinguish between divestitures in core (i.e., high relatedness) business and non-core (i.e., low relatedness) business activities. The SIC codes for the divested units are collected from Thomson One Banker's M&A Deals Analysis module, while the primary SIC codes are collected from Bureau van Dijk's Orbis database.

Table 2 (Panel A) presents an overview of the sample sizes for the different levels of the divested brands' geographical scope and industry relatedness. We observe a decrease in the number of divested cases with an increase in the geographical scope and in the industry relatedness of the divested brand. About half of the cases involve the divestiture of local brands, followed by regional brands (28% of the cases). The divestiture of global brands occurs in less than 20 percent of the cases. Furthermore, 60 percent of the divested brands are non-core business brands while 40 percent are core business brands. As expected, the divestment of brands with low relatedness and low geographical scope appeared most frequently. The divestments of brands with high relatedness and high geographical scope were rare events; the removal of global, core business brands appeared in only four percent

of all cases in our sample. Overall, we observe a substantial number of non-core business, global brand divestitures and core business, local brand divestitures.

**Table 2: Brand divestitures: frequency and effect sizes among different levels of geographical scope and industry relatedness**

Panel A: Frequency of different type of brand divestitures

|  | Local brands | Regional brands | Global brands | Total |
|---|---|---|---|---|
| Core business brands | 51 | 22 | 8 | 81 |
| Non-core business brands | 57 | 36 | 31 | 124 |
| Total | 108 | 58 | 39 | 205 |

Panel B: Magnitude of effect sizes: mean scores in $ millions (event window (-3, +1))

|  | Local brands | Regional brands | Global brands | Total |
|---|---|---|---|---|
| Core business brands | -104.36 | -49.76 | -299.72 | -108.83 |
| Non-core business brands | 301.66 | 295.77 | -35.96 | 215.54 |
| Total | 109.93 | 164.71 | -90.07 | 87.38 |

## 2.4 Analysis and Results

### 2.4.1 Hypotheses testing

To test our hypotheses, we analyze the CARs for the divestiture of brands with three levels of geographical scope, i.e., local, regional, and global, and two levels of industry relatedness, i.e., core and non-core. Table 3 presents these CARs for varying event windows and different test statistics.

Hypothesis 1 states that the divestiture of brands with low relatedness and low geographical scope will enhance firm value. This is confirmed by the results in Table 3. For the divestment of local, non-core brands, we indeed find significant positive effects for all

reported event windows. In contrast, but as expected, we find significant negative effects on firm value for the divestment of global, core brands, for all but one reported event windows. This confirms Hypothesis 2.

**Table 3: Mean cumulative abnormal returns (CARs) with respect to geographical scope and industry relatedness**

Panel A Local brands (N=108)

| | Event window | | | | | | |
|---|---|---|---|---|---|---|---|
| | (-3,+1) | (-3,0) | (-2,+1) | (-2,0) | (-1,+1) | (-1,0) | (0,+1) |
| **Core business brands (N=51)** | | | | | | | |
| Mean CAR | -0.746 | -0.458 | -0.853 | -0.565 | -0.920 | -0.632 | -0.624 |
| Z-value [a] | -1.95† | -1.51 | -2.18* | -1.75† | -2.36* | -1.95† | -1.93† |
| % of positive CARs | 29.41 | 33.33 | 29.41 | 31.37 | 25.49 | 23.53 | 29.41 |
| Z-value [b] | -2.54* | -1.99* | -3.29*** | -2.79** | -3.42*** | -2.94** | -3.07** |
| **Non-core business brands (N=57)** | | | | | | | |
| Mean CAR | 0.824 | 0.716 | 0.830 | 0.723 | 0.906 | 0.798 | 0.567 |
| Z-value [a] | 1.78† | 1.96† | 1.99* | 2.16* | 2.42* | 2.78** | 1.87† |
| % of positive CARs | 59.65 | 59.65 | 66.67 | 70.18 | 66.67 | 71.93 | 61.40 |
| Z-value [b] | 1.74† | 2.13* | 2.66** | 3.29*** | 3.31*** | 4.03*** | 2.04* |

Panel B Regional brands (N=58)

| | Event window | | | | | | |
|---|---|---|---|---|---|---|---|
| | (-3,+1) | (-3,0) | (-2,+1) | (-2,0) | (-1,+1) | (-1,0) | (0,+1) |
| **Core business brands (N=22)** | | | | | | | |
| Mean CAR | -0.667 | -0.442 | -0.730 | -0.505 | -0.813 | -0.588 | -0.652 |
| Z-value [a] | -1.38 | -0.96 | -1.85† | -1.45 | -2.35* | -2.05** | -2.32* |
| % of positive CARs | 31.82 | 27.27 | 31.82 | 36.36 | 31.82 | 27.27 | 36.36 |
| Z-value [b] | -1.87† | -1.38 | -1.74† | -1.06 | -2.35* | -1.67† | -1.80† |
| **Non-core business brands (N=36)** | | | | | | | |
| Mean CAR | 0.861 | 0.607 | 1.053 | 0.800 | 0.799 | 0.545 | 0.525 |
| Z-value [a] | 1.70† | 1.05 | 2.22* | 1.58 | 2.22* | 1.51 | 1.81† |
| % of positive CARs | 61.11 | 55.56 | 61.11 | 55.56 | 66.67 | 55.56 | 58.33 |
| Z-value [b] | 1.87† | 1.12 | 1.96* | 1.24 | 2.31* | 1.45 | 2.00* |

Panel C Global brands (N=39)

| | Event window | | | | | | |
|---|---|---|---|---|---|---|---|
| | (-3,+1) | (-3,0) | (-2,+1) | (-2,0) | (-1,+1) | (-1,0) | (0,+1) |
| Core business brands (N=8) | | | | | | | |
| Mean CAR | -1.386 | -1.453 | -1.458 | -1.525 | -0.858 | -0.925 | -0.076 |
| Z-value [a] | -1.88† | -2.04* | -2.06* | -2.32* | -1.70† | -2.01* | -0.92 |
| % of positive CARs | 12.50 | 12.50 | 12.50 | 12.50 | 0.00 | 25.00 | 37.50 |
| Z-value [b] | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Non-core business brands (N=31) | | | | | | | |
| Mean CAR | -0.333 | -0.424 | -0.542 | -0.633 | -0.658 | -0.749 | -0.158 |
| Z-value [a] | -0.30 | -0.66 | -1.12 | -1.67† | -1.66† | -2.50* | -0.67 |
| % of positive CARs | 48.39 | 48.39 | 48.39 | 48.39 | 48.39 | 41.94 | 45.16 |
| Z-value [b] | -0.43 | -0.41 | -0.94 | -0.71 | -0.55 | -0.61 | -0.61 |

† P<0.10; *P<0.05, **P<0.01; ***P<0.001
a Patell z-statistic (Patell, 1976) is used to test for the statistical significance of CARs.
b Wilcoxon signed-rank test is used to test-values are derive z-values.

For the divestment options in the off diagonal quadrants in Figure 1, i.e., local, core brands and global, non-core brands, we did not formulate hypotheses in advance. The CARs in Table 3 reveal that both divestment options destroy value. The effects are strongest for the local, core brand divestments.

For the divestments of regional brands, we observe a similar pattern as for the divestment of local brands. The divestment of regional, core brands has a negative impact on firm value, while the divestment of regional, non-core brands has a positive effect. Both effects are significant for four out of the seven reported event windows.

In sum, the cumulative abnormal returns reported in Table 3 demonstrate that divesting core business brands has a negative effect on firm value regardless of the divested brand's geographical scope. Divesting non-core brands also has a negative effect in case of global brands (for three event windows). However, the divestment of non-core brands has a positive impact on firm value in case of local (for all event windows) and regional brands

(for four event windows). Our results clearly emphasize the importance of integrating the two strategic perspectives, i.e., the divested brand's industry relatedness and its geographical scope, in a single common framework.

The reported CARs in the analysis are measured as the percentage change in share price after it has been adjusted for changes resulting from general market movements. To provide insight into the magnitude of the monetary value of the implied performance effects, we calculated the monetary effect sizes across all events belonging to a particular type of brand divestment (see Table 2, Panel B). Effect sizes in monetary value are calculated by multiplying the CAR for the longest event window (-3, +1) with the market capitalization of the firm, which is calculated by multiplying a company's number of outstanding shares with the current market price of one share. In our analysis, the number of outstanding shares stays constant during the event window, because we excluded announcements with confounding events such as stock splits, dividends/distributions, and right offerings. Therefore, the percentage change in the market price of one share can be directly translated to a percentage change in the market capitalization of the firm.

The results in Table 2 (Panel B) are in line with the reported mean CARs for each type of divestment. Deleting core brands leads to an average decrease in market capitalization of $108.83 million, while deleting non-core brands leads to an average increase in market capitalization of $215.54 million. Deleting non-core, global brands, however, entails a decrease in market capitalization of $35.96 million. Only in case of deleting a local or regional, non-core brand we find a positive effect on the market capitalization.

In a subsequent cross-sectional analysis, we controlled for the effect of the divested brand's relative size, calculated as the ratio of the prior year sales of the divested brand

relative to the prior year sales of the divesting firm. The data on brand sales were mainly gathered from the announcements, while in some cases companies' financial reports were used. We do not find a statistically significant effect for the relative size of the divested brand, and moreover, controlling for this effect does not change the main findings of our study.

*2.4.2 Post-hoc analysis*

Our results show that, on average, firms experience negative abnormal returns due to the divestment of core brands, even if the removed brand has a low geographical scope (i.e., local and regional brands). Apparently, the advantages of divesting a local (or regional) brand do not outweigh the disadvantages of divesting a core brand, or alternatively divesting local (and regional) brands may also entail severe disadvantages. However, in practice many firms experience proliferation not only in their non-core businesses, but in their core businesses as well. Furthermore, as shown in Table 2 (Panel A), removing core business brands with low geographical scope is one of the most common forms of focus-increasing divestitures (i.e., about 36% of all cases in our data). Therefore, it is important to understand why divesting local and regional brands in core businesses have, on average, negative effects. Below we offer two explanations.

First, certain local brands may have a very particular 'appeal' to local customers; they may be perceived as highly esteemed, and familiar, and therefore have a strong and loyal consumer base (Schuiling & Kapferer, 2004). Moreover, local brands may have strong appeals in their home markets due to their perceived local iconness, i.e., the extent to which a brand is perceived as a symbol of the local culture and tradition. In food categories, which are the focus of this paper, local icons are perceived to be of higher

quality. Further, a close connection to national identity, local culture, and heritage may enhance a brand's prestige, which in turn may increase the purchase likelihood of the local brand (Özsomer, 2012). Therefore, a local brand's contribution to top-line performance might seem limited, but once divested companies may fail to migrate these brands' customers to other core-business brands. As a result, benefits of such divestitures may not go beyond cost-saving while revenues also suffer. A second explanation may be that, due to an information advantage, companies can better identify consumer needs and their buying behavior in their 'home regions' than in away regions. For example, there might be a potential negative effect of cultural distance on products related to national identity (e.g., food) or products carrying country-specific quality associations (e.g., wines) (Ghemawat, 2001). Better understanding of the local culture, tastes, and needs help local brands in delivering higher quality and higher prestige products (Özsomer, 2012). Companies have an apparent advantage in building and managing local brands in their home regions, because assets such as knowledge of local culture are accumulated relatively more easily in home markets than in away markets. Moreover, home region brands tend to be managed more effectively and monitored more closely by the best managers, because of geographic proximity to the head-office. Therefore, in their home regions they can offer brands that meet consumer needs more effectively. After the divestiture of such brands, retained brands may not regain the lost market share. Moreover, in such cases, any top-line drop due to the loss of divested brands' demand is likely to have negative effects on bottom-line performance, since companies usually have higher profit margins in their home regions (McGahan & Victer, 2010).

We ran cross sectional regressions to examine the effect of these two variables on the abnormal returns due to divesting core brands with low geographical scope. For this

purpose we took the subsample of 73 announcements of the divestment of local and regional core brands (see Table 2, Panel A). To operationalize brand appeal to consumers, we used information from the announcement. We looked for terms, such as 'well-known,' 'iconic,' 'familiar,' or 'esteemed' to code our dummy variable 'Appeal,' which takes the value 1 when the divested brand is appealing to consumers. To operationalize the variable 'Home Region,' we categorized brands according to the geographical markets where they were present and then compared this to the geographical location of the company. If these two geographical locations were the same, the dummy variable was coded as 1. We also include a dummy variable to indicate whether the brand is local (=1) or regional (=0). The results of these regression analyses are reported in Table 4.

**Table 4 : Cross-sectional regressions of local and regional brands in core business (sub sample N = 73)**

| Independent variable | Dependent variable | | | | | | |
|---|---|---|---|---|---|---|---|
| | CAR (-3,+1) | CAR (-3,0) | CAR (-2,+1) | CAR (-2,0) | CAR (-1,+1) | CAR (-1,0) | CAR (0,+1) |
| Intercept | 0.816 | 0.843 | 0.448 | 0.474 | 0.042 | 0.068 | -0.059 |
| | (0.61) | (0.57) | (0.52) | (0.44) | (0.41) | (0.35) | (0.38) |
| Appeal | -1.331* | -1.252* | -1.139* | -1.060** | -1.063** | -0.983** | -0.664* |
| | (0.55) | (0.51) | (0.47) | (-0.39) | (0.37) | (0.31) | (0.34) |
| Home Region | -1.720** | -1.416** | -1.304** | -1.00* | -0.769* | -0.465 | -0.591† |
| | (0.56) | (0.53) | (0.48) | (0.41) | (0.38) | (0.32) | (0.35) |
| Local | 0.204 | 0.230 | 0.101 | 0.128 | 0.058 | 0.084 | 0.142 |
| | (0.60) | (0.56) | (0.51) | (0.43) | (0.40) | (0.34) | (0.37) |
| Adjusted $R^2$ | 0.16 | 0.14 | 0.14 | 0.14 | 0.13 | 0.13 | 0.06 |
| F-statistic | 5.67*** | 4.93*** | 5.02*** | 4.90*** | 4.66*** | 4.46*** | 2.49* |

† $P<0.10$; *$P<0.05$, **$P<0.01$; ***$P<0.001$
For each independent variable, unstandardized coefficients are reported. The numbers in parentheses are standard errors.

In line with our expectations, the results indicate that divesting a brand with a particular appeal to consumers has a significant, negative effect on firm value. The same applies for the divestment of a home-region brand. Home-region brands may address customer needs better than away-region brands, and we, therefore, argue that divesting home-region brands assets can be more risky than divesting away-region brand assets.

## 2.5    Conclusion

*2.5.1 Discussion of findings*

In this paper we have empirically investigated the effects of focus-increasing brand divestitures using a multidisciplinary perspective. Previous studies on divestitures focused on the effects of divesting either non-core business assets (strategic management/divestment literature) or local brands (international branding literature). This study contributes to both literatures by investigating the stock market's reaction to a firm's brand divestment activities and by showing that both brand divestment characteristics, i.e., core versus non-core, and local/regional versus global, in parallel determine the value creating/destroying effects such divestments. Moreover, in line with (Meyer, 2006), who discusses the benefits of a global-focus strategy, this is the first study that provides empirical evidence for the positive effects of such a strategy. We show that divesting brands scoring low on both industry relatedness and geographical scope, i.e., the local/regional, non-core brands increases firm value, while the opposite is true for brand divestments that score high on both dimensions.

We show that divesting non-core brands in order to focus on core brands creates firm value, but only if the divested brands are local or regional ones. We cannot see the

same positive effect for divesting global, non-core brands. Actually, for three out of the seven event windows we find a significant negative impact of divesting a global, non-core brand. For the other event windows we also find a negative parameter, though not significant. Our results suggest that divesting a non-core brand does not always enhance firm value. Although the divestment of a non-core, global brand happens in a minority of the cases in our sample (15%), it is an interesting finding, which contributes to the divestment literature. So far this literature only showed value-enhancing effects of divesting non-core assets (Daley, Mehrotra, & Sivakumar, 1997; Desai & Jain, 1999; John & Ofek, 1995). By also taking into account the geographical scope of the divested brand asset, we develop a more nuanced picture.

Divesting a global brand appears, on average, to lead to negative reactions from investors, no matter whether the brand is a core or non-core business brand. Apparently, the value of global brands due to the economies of scale in production, R&D, and marketing as well as the economies of scope is high (Hankinson & Cowking, 1996), leading firm value to decrease when divesting such brands.

As far as we know, this is the first empirical study showing that the strategy advocated in the international branding literature to divest brands with low geographical scope in order to focus more on strong global brands (see e.g., Kumar, 2003) will not always create positive firm value. When taking into account the industry relatedness of the divested brand, we see a different picture. The divestment of local and regional, core business brands appears, on average, to destroy firm value. Although global brands offer numerous advantages, such as cost efficiencies, they may fail to appeal to local tastes. The attitude toward local products is still ubiquitous in many countries (Steenkamp & de Jong, 2010). Local brands, especially in core businesses, generally have a high brand equity, because they

are well known in their markets, develop a true local value by responding to local needs, and consequently local consumers often have strong relationships and emotional ties with these brands (Schuiling & Kapferer, 2004; Steenkamp et al., 2003). In case a company sells a local, core business brand to another company, consumers may be hesitant to give up their favorite local brands just because the owner has been changed. Alternatively, replacing them with global brands may not warrant customers' switch to this global brand. For example, when P&G gave up the local dishwasher detergent 'Fairy' for its global brand 'Dawn' in Germany, the company's market share in dishwashing fell. The global brand that replaced 'Fairy' received an unanticipated negative reaction from consumers who were strongly tied to the once popular 'Fairy' brand, and even reverting to the original 'Fairy' brand name did not bring the brand back to its former glory (Kapferer, 2008).

The results of our post-hoc analyses provide more insight into this negative effect of divesting local/regional, core brands, and show that if the divested brand is appealing this negatively influences the abnormal return. Furthermore, the divestment of core brands with limited geographical scope has more dramatic consequences when undertaken in home regions. One possible explanation is that companies are more likely to offer very effective brands in their home regions than in away regions because they are better informed about these home regions consumers' needs and preferences. Home regions are often the markets where companies have been active the longest time. Such tenure of operations has been found to be positively related to organizational knowledge (Benito & Gripsrud, 1992). This makes it more likely that they build strong and loyal customer bases and enjoy higher profit margins for home region brands than for brands in foreign regions.

*2.5.2 Managerial implications*

Our findings yield important implications for managers who are responsible for brand portfolios and who consider brand divestments. In practice, brand managers are often reluctant to make brand divestment decisions. The reasons can be many, including fear of losing jobs, being hesitant in admitting failure of a brand, or the managers' emotional ties with the divested brands. Moreover, most brand managers give high consideration to develop strategies to enhance their brands' performance, but they may have little or no concern about whether other businesses of the company have more profitable uses for the resources of their brands.

Our study clearly shows that in certain instances focus-increasing brand asset sales may increase firm value. However, our results also demonstrate that divesting brands can be risky as well. If we look at the strategies of P&G and Unilever as outlined in the beginning of this paper, we conclude that both strategies bear the risk of destroying firm value. P&G divested non-core brands in order to focus on their core businesses, and even divested global brands (e.g., Pringles) for this purpose. We show that such divestments certainly do not lead to positive reactions from investors, and might even entail a negative impact on firm value. Unilever divested mainly local and regional brands in order to reduce the number of brands and shifted its resources to fewer important global brands. Our study shows that this strategy only increases firm value if non-core brands are divested, but destroys value if core brands are divested.

Our study indicates a single pathway when companies are faced with problems of proliferated brand portfolios, i.e., refocusing and internationalization forces to act in the same direction. More specifically, looking from a firm value perspective, non-core business

brands with low international presence should be the primary candidates for divestitures, while divesting core or global brands should be avoided.

To summarize, companies should rationalize their offerings towards a portfolio that follow a multi-tier branding strategy in core businesses. Many leading CPG companies offer a collection of local, regional, and global brands in their core businesses. For example, Kraft Foods' portfolio of brands includes several local (e.g., Opavia biscuit in Czech Republic), regional (e.g., LU biscuit in Western Europe), and global (e.g., Oreo biscuit all over the world) ones in their core snacks and confectionary business. Similarly, Diageo's portfolio of brands include some local beer brands such as Serengeti Premium in Tanzania, regional brands such as Tusker in Africa, and a global Smithwick's brand that is sold in North America, Europe, and Australia. Another company that successfully manages a portfolio of local and global brands is Anheuser-Busch InBev (Steenkamp & de Jong, 2010). Such an approach allows them to enjoy higher profit margins by targeting premium segments with global brands and to enjoy greater market share by better satisfying fragmented consumer needs with their local brands. This is especially important in their home regions. Companies have higher earning margins in both core businesses and home regions. In other words, simplification should be avoided in industry and country markets where earning margins are high. Otherwise, the possible demand losses after divestitures may hurt bottom-line growth. For non-core business activities companies should pursue a global branding strategy only.

### 2.5.3 Future research

This study focused on brand asset sales in the food and beverages industry. Future research could focus on similar divestitures in other industries to determine whether our

results generalize beyond the current setting. Second, we used stock prices to operationalize the change in the firm value, and therefore focus on the return at the aggregate firm level. Future research could reveal the performance effects of brand divestments by linking them to a multitude of other financial performance indicators, such as revenues, operating margins, advertisement expenses and employee efficiency. Third, due to data considerations, we used only a limited number of variables that characterize the brand portfolios and divested brands. However, a wider range of brand- (e.g., strategic role, age, modifiability) and brand portfolio-level factors (e.g., degree of cannibalization, intra-portfolio competition, the number and strengths of the retained brands in the selling firm's portfolio) could moderate the effects of focus-increasing brand divestiture decisions. The study by (Varadarajan et al., 2006) provides a comprehensive list of such factors that trigger these decisions. Further research could assess their value relevance. Finally, an interesting extension could be looking at abnormal returns in the stock value of the acquiring firms to find out how acquiring firms benefit from core/non-core and local/global brand acquisitions.

# Chapter 3

# Who Benefits from Brand Exits? Why?

I n an attempt to meet the changing needs of the fast-paced and fiercely competitive marketplace, both manufacturers and retailers frequently update their brand portfolios; they add new brands, extend existing brands, or drop slow moving brands to build portfolios that ultimately maximize performance. Given the frequency with which these events occur, marketing scholars have paid close attention to modeling market response to changes in the set of product or brand alternatives. For example, with more than 180,000 new grocery products launched globally every year –one every 3 minutes– firms are spending millions annually on product innovation (Information Resources Inc., 2005). Extant research, accordingly, has made significant headway in developing a better understanding of market response to new brand (product) introductions (e.g., Aaker & Joachimsthaler, 2000; Bowman & Gatignon, 1996; Chintagunta, 1996; Chintagunta, 1999; Pauwels & Srinivasan, 2004; van Heerde, Mela, & Manchanda, 2004; van Heerde,

Srinivasan, & Dekimpe, 2010). While the spotlight has rightfully been on newcomer brands so far, brands that have been driven off the shelves have quietly become an important piece of the puzzle in the management of manufacturer brand portfolios and retailer assortments. Accordingly, this study takes up this relatively understudied phenomenon of brand exits.[2]

The rising importance of brand exits is perhaps most readily apparent in the ongoing transition from "more is better" to "more is too much" approach. In the 90s, one of the most fundamental tenets of marketing was that more choice was better for the consumer. Manufacturers, who were already following an acquisition-led growth strategy at the time, accelerated new brand activity to meet consumers' ever-increasing need for variety. As a result, the average number of items in a US grocery store more than tripled (Broniarczyk & Hoyer, 2010).

Conventional wisdom has it that increasing variety gives the consumers more options, but proliferation, more often than not, brings problems along with it. From consumers' perspective, choosing from a large number of alternatives can increase choice difficulty and decrease purchase likelihood (Iyengar & Lepper, 2000). From manufacturers' standpoint, managing proliferated brand portfolios increase managerial complexity and decrease focus (Hill et al., 2005). Finally, from retailers' perspective, a large number of brands limits growth opportunities for private labels because of scarce shelf space for private label ranges and a higher level of competitor marketing activity. Consequently, retailers and manufacturers have started to rethink the very basic tenets of how to effectively address consumer needs and set their sights on streamlining their brand offerings.

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[2] We define brand exit as the removal of a brand from store shelves either by a manufacturer or a retailer and use the terms exit, deletion, and delisting interchangeably.

Realizing the negative consequences of brand proliferation on consumers (Schwartz, 2004) and the undesirable effects of bloated and unfocused portfolios on company performance (Aaker & Joachimsthaler, 2000; Morgan & Rego, 2009), manufacturers, such as Unilever and Procter and Gamble have been eliminating their underperforming or redundant offerings (Ng, 2014; Watrous, 2014). Retailers adopt a similar approach to the proliferation problem. In order to increase focus on their private labels with high margin potential, improve their negotiation posture with brand manufacturers, and ultimately maximize category profitability, retailers implement major assortment changes three to four times a year. Minor assortment changes can be observed as often as weekly (Sloot, Fok, & Verhoef, 2006; Sloot & Verhoef, 2008). In sum, portfolio rationalization efforts of manufacturers and assortment optimization efforts of retailers make brand exits rather frequent events.

The ever-increasing frequency of brand exits coupled with the sheer amount of demand that frees-up following these events begs the question whether and which brands benefit (or suffer) from the exit and why? Accordingly, this study seeks to shed light on the long-term effects of brand exits by analyzing the drivers of excess demand redistribution following the event. Research on assortment reduction offers insights into what happens after a choice alternative is withdrawn from the market (e.g., Borle, Boatwright, Kadane, Nunes, & Galit, 2005). However, these studies (1) primarily consider SKU reductions, (2) almost exclusively focus on the category level effects of assortment reductions (e.g., Sloot et al., 2006), and (3) fail to explain why certain brands benefit from the deletion while others do not (see Zhang & Krishna, 2007 for an exception). Our goal, on the other hand, is to uncover what influences realignment of brand sales after a brand exit and generate profound insights that will help manufacturers deleting the brands, the manufacturers of

competing brands, and the retailers better manage their marketing efforts in the aftermath of brand exits.

To that end, we develop a Dynamic Linear Model (DLM) model, which examines how the sales of incumbent brands respond to a brand exit. Specifically, we model the long-term effect of a brand exit on an incumbent brand's baseline sales. As incumbent brands with product portfolios similar to that of the delisted brand stand to gain more from the exit, we assume that the effect on baseline sales is related to the proximity of the two brands in a multidimensional attribute space. We also assume that the realignment of sales after the exit can be influenced by the post-exit marketing efforts of the incumbent brand in question. Finally, as exits typically have permanent, but not necessarily instantaneous, effects on remaining brands' sales, we allow the market adjust to its new normal gradually. Using MCMC techniques, we calibrate this model on aggregate store level data acquired from Information Resources, Inc. (see Bronnenberg, Kruger, & Mela, 2008).

We apply our methodology to 96 brand exit events in the deodorant and milk product categories and examine the effects of these exits on 555 incumbent brands' sales. The results indicate that the market shares of a deleted and an incumbent brand, and the incumbent brand's similarity to the deleted brand explain variations in sales response to exits across brands. We examine the effect of similarity on multiple dimensions and reveal what underlying product attributes are most critical in attracting consumers of the deleted brand. We further find that increasing the number of an incumbent brand's product alternatives and an incumbent brand's non-price oriented promotion frequency are effective post-exit marketing efforts to claim a higher portion of the sales of the deleted brand.

We believe that the results of this study will help (i) owners of the delisted brands determine what portion of the demand that frees up can be recovered by surviving brands in their own portfolios, (ii) owners of competing brands in the product category how to best manage their product portfolios to meet the freed up demand, and (iii) both parties focus their marketing efforts on where it will have the most impact following a brand exit.

The remainder of this chapter is structured as follows: In Section 3.1, we position our study against existing literature and identify modeling challenges imposed by the findings of extant research and the nature of the problem. We discuss our model specification in Section 3.2. In Section 3.3, we discuss our data and operationalization of variables. We present the results in Section 3.4. We discuss our findings and offer managerial implications in Section 3.5 and we end up in Section 3.6 with concluding remarks.

## 3.1 Extant Research and Modeling Challanges

### 3.1.1 Background for the study

Our study builds on two related streams in the marketing literature, namely literature on stock-outs and on assortment reductions. Studies in both streams focus on consumer reactions to some form of product unavailability and offer complementary insights to the problem at hand. Table 5 provides a selective overview of prior research and discusses extant work along four dimensions: (1) type of unavailability studied (brand vs. item), (2) duration of unavailability (temporary vs. permanent), (3) level of analysis (category-level vs. brand-level), and (4) the speed of adjustment (immediate vs. gradual).

The first dimension, type of unavailability, distinguishes between unavailability of an item and unavailability of a brand. While most of the research on assortment reductions

(e.g., Boatwright & Nunes, 2001; Borle et al., 2005; Dreze, Hoch, & Purk, 1994; Sloot et al., 2006; Zhang & Krishna, 2007) and stock-outs (e.g., Campo, Gijsbrechts, & Nisol, 2000; Campo, Gijsbrechts, & Nisol, 2003; Campo, Gijsbrechts, & Nisol, 2004; Sloot, Verhoef, & Franses, 2005) investigate the effect of SKU unavailability on various performance dimensions, some studies also provide insights on what happens when all SKUs of a brand are delisted (e.g., Peckham, 1963; Sloot & Verhoef, 2008; Verbeke, Farris, & Thurik, 1998; Wiebach & Hildebrandt, 2012). What distinguishes the two types of unavailability from each other is that in one case, consumers still have the option of switching to another item of the same brand. Our work is in line with studies focusing on brand delistings (unavailability of all SKUs of a brand).

**Table 5: Overview of selected studies in related literature streams**

| Study | Research Focus | Unavailability | | Level of Analysis | Speed of Adjustment |
|---|---|---|---|---|---|
| | | Type | Duration | | |
| Emmelhainz et al. (1991) | OoS | Item | T | Category | I |
| Campo et al. (2000) | OoS | Item | T | Category | I |
| Zinn and Liu (2001) | OoS | Item | T | Category | I |
| Sloot et al. (2005) | OoS | Item | T | Category | I |
| Kalyanam et al. (2007) | OoS | Item | T | Item | G |
| Che et al. (2012) | OoS | Item | T | Item | I |
| Campo et al. (2003) | OoS | Item | T | Brand | G |
| Peckham (1963) | OoS | Brand | T | Category | I |
| Verbeke et al. (1998) | OoS | Brand | T | Category | I |
| Campo et al. (2004) | OoS & AR | Item | T & P | Category | I |
| Drèze et al. (1994) | AR | Item | P | Item | I |
| Boatwright and Nunes (2001) | AR | Item | P | Category | I |
| Borle et al. (2005) | AR | Item | P | Category | I |
| Sloot et al. (2006) | AR | Item | P | Category | G |
| Zhang and Krishna (2007) | AR | Item | P | Brand | I |
| Tan and Cadeaux (2011) | AR | Item & Brand | P | Category | I |
| Sloot and Verhoef (2008) | AR | Brand | P | Category | I |
| Wiebach and Hildebrandt (2012) | AR | Brand | P | Category | I |
| **This study** | **BE** | **Brand** | **P** | **Brand** | **G** |

Notes: OoS stands for out-of-stock, AR for assortment reduction, and BE for brand exit. T represents temporary unavailability while P is permanent unavailability. The speed of adjustments can either be immediate (I) or gradual (G).

The second dimension, duration of unavailability, makes a distinction between short-term (or temporary) unavailability and long-term (or permanent) unavailability. Literature

on stock-outs (e.g., Campo et al., 2000; Campo et al., 2003; Sloot et al., 2005) provides insights on how consumers respond to short term unavailability of products, whereas assortment reduction studies (e.g., Boatwright & Nunes, 2001; Borle et al., 2005; Dreze et al., 1994; Sloot et al., 2006; Sloot & Verhoef, 2008; Wiebach & Hildebrandt, 2012; Zhang & Krishna, 2007) advance our understanding of consumer response to permanent unavailability. Campo and colleagues (2004) investigate whether consumers react differently to temporary unavailability of a product than to permanent unavailability. The authors argue that as a result of differences between the two cases –by and large due to lack of short term solutions (e.g., deferring the purchase) to permanent unavailability– losses due to permanent unavailability are larger than losses due to temporary unavailability. In this study we focus on the permanent unavailability case.

Extant research also differs in terms of the level of analysis. Table 5 indicates that majority of the studies examine category level effects of product unavailability (e.g., Boatwright & Nunes, 2001; Borle et al., 2005; Sloot et al., 2006). Moreover, while some studies in the literature offer insights on behavioral consequences of unavailability by modeling consumers' item, size, brand, and store switching decisions (e.g., Campo et al., 2000; Campo et al., 2004; Kalyanam, Borle, & Boatwright, 2007; Sloot et al., 2005; Verbeke et al., 1998; Wiebach & Hildebrandt, 2012), only a handful considers brand level effects (e.g., Campo et al., 2003; Dreze et al., 1994; Zhang & Krishna, 2007). Our study investigates the brand level effects.

A final dimension along which studies differ is the market's assumed speed of adjustment. Prior research typically compares sales or behavior of individuals before and after assortment reductions and assumes that consumer response to product unavailability is immediate (e.g., Sloot et al., 2005; Sloot et al., 2006; Zhang & Krishna, 2007). On the

other hand, several studies argue that the effect may not materialize instantaneously but instead adjust gradually (Campo et al., 2003; Kalyanam et al., 2007; Sloot et al., 2006). In this study we allow for gradual adjustment of brand exit effects.

In sum, motivated by the ubiquity of strategic assortment reductions and stock-outs, the question of "how do consumers respond to product/brand unavailability?" has drawn great interest from marketing scholars. Studying the multi-layered features of these events (e.g., permanent vs. temporary unavailability, brand vs. item delisting), prior research offers valuable insights from a variety of perspectives (e.g., immediate effects vs. long term effects, category level effects vs. brand level effects). Yet, several questions remain unanswered. How does permanent unavailability of a brand affect performance of other brands? Are these effects are temporary or permanent? What underlying factors drive differences in effects across brands? What brands are better positioned to claim sales of a dropped brand? What is the effect of post-exit marketing efforts of incumbent brands on realignment of sales after exits?

Our study investigates the effects of permanent removal of a brand in a particular store on all of the remaining brands in that store (who benefits from brand exits?). We are agnostic about who is behind the delisting decision (manufacturer or retailer). Our main focus is to identify the underlying factors of the redistribution of demand that frees up following a brand exit (why?). Consistent with recent work, we allow the market to gradually adjust to its new equilibrium.

*3.1.2 Modeling challenges*

The findings of the aforementioned studies coupled with the nature of the managerial problem at hand impose several modeling challenges and requirements, which we discuss subsequently.

First, as our goal is to investigate how an exit affects the performance of incumbent brands within the product category, the model should be specified at the brand level. Brand sales series are typically characterized by short-term fluctuations –due to marketing activity– around a base sales level. To avoid misattributing the effect of an exit to potential changes in marketing activity, the model should filter out short-term fluctuations from base sales. Furthermore, markets are characterized by frequent brand introductions as well as exits and brand sales can change in response to introductions. The model, therefore, should separate out the long-term effect of brand introductions on sales. We assume that the effect of an exit will exhibit itself in the baseline sales of the incumbent brand. It is possible that the incumbent brand's baseline sales might evolve over time due to marketing activity and unaccounted factors. Therefore, the model, while capturing the effect of brand exits on baseline sales, should control for the effect of marketing activity and incorporate unexplained changes in baseline sales as well.

Second, consumer preferences evolve over time as consumers accumulate consumption experiences (Ho & Chong, 2003). Therefore, faced with the unavailability of their preferred brand, consumers might shop around till they find their new favorite brand. Hence, sales may not realign instantaneously after a brand exits the market. Addressing a related yet opposite problem, research on market response to new brand and product introductions emphasizes the importance of gradual adjustment of effects when there is a

change in the set of available products and brands in the market (e.g., Pauwels & Srinivasan, 2004; van Heerde et al., 2004; van Heerde et al., 2010). Accordingly, the model should be flexible enough to capture gradual adjustment patterns and easily handle estimation of time-varying parameters.

Third, consumers make their product choices by considering the underlying attributes of each product (e.g., Bell, Bonfrer, & Chintagunta, 2005; Fader & Schmittlein, 1993). In other words, they are more likely to select certain brands because they seek out specific attributes. They develop tastes and preferences for certain attributes as they accumulate shopping experiences; and eventually become familiar with them. They use these attribute-level familiarities to narrow down available alternatives (Ho & Chong, 2003). When two products share a set common attributes and positioned very similarly, they will attract similar types of consumers, those who value particular set of attributes that the two brands share. Therefore, to the extent that an incumbent brand is similarly positioned to the delisted brand, that brand is better positioned to pick up share of the removed brand. In that regard, the model should relate the gains (or losses) from exits to brand similarities. Yet, each brand hosts several SKUs. Given that each SKU represent a unique combination of attribute levels within the brand, positioning of a brand on attribute space should be based on attribute levels of each SKU hosted under that brand name. The model, accordingly, needs to operationalize similarity between two brands as a function of attributes of each SKU under those brands.

Fourth, while the realignment of sales after exits may happen organically, managers of incumbent brands might also use marketing activity to pick up the sales of the removed brand (e.g., Ataman, Mela, & van Heerde, 2008). Therefore, the model should relate the effect of brand exits to marketing efforts.

Finally, effects of exits may differ across brands, stores, and product categories (e.g., Borle et al., 2005; Sloot et al., 2006). To obtain unbiased parameter estimates, the model should retain the cross sectional nature of the data and integrate well with a hierarchical Bayesian approach. This is a difficult challenge to overcome for most time series models as aggregating data across stores induce biased parameter estimates (van Heerde et al., 2004).

To overcome these challenges, we specify a Dynamic Linear Model (DLM) of brand sales that (1) separates baseline sales from short-term fluctuations due to marketing activity, (2) allows for gradual adjustment patterns, (3) relates the effects of brand exits to the similarity of brands on a multidimensional attribute space, (4) relates the effects of brand exits to the marketing efforts of the incumbent brand, and (5) integrates well with a hierarchical Bayesian approach. Next section discusses the model specification.

## 3.2   Model

To investigate the effects of permanent removal of a brand in a store on all of the remaining brands in that particular store, we specify a dynamic linear brand sales response model at the store level (see Ataman et al., 2008; Bass, Bruce, Majumdar, & Murthi, 2007; Neelamegham & Chintagunta, 2004; van Heerde et al., 2004 for DLM applications in marketing; and West & Harrison, 1997 for an extensive overview).

### 3.2.1 Observation and evolution equations

The observation equation separates the baseline sales of the brand from short-term effects of marketing activity, the effect of major changes in the category such as new brand introductions, and seasonal fluctuations. (see challenge#1 in previous section):

$$Sales_{ist} = \alpha_{ist} + \beta_{is}X'_{ist} + v_{ist} \qquad (6)$$

where Sales$_{ist}$ is the sales of brand $i$ in store $s$ in week $t$ and $\alpha_{ist}$ is the baseline sales. The regressor matrix X$_{ist}$ includes control variables (see Ataman et al., 2008 for a similar formulation of the observation equation). We control for observed marketing activity of the focal brand, new brands which are introduced to the market, and seasonal patterns.[3] For the effect of observed marketing activity on a given week's sales, we control for price-oriented and non-price oriented sales promotions. We elaborate on the operationalization of these variables in the next section. To be estimated parameters include the baseline sales $\alpha_{ist}$ and the effect of control variables $\beta_{is}$. We assume the disturbance term is normally distributed and independent across brand, store, and time ($v_{ist} \sim N(0,V_{is})$).

The evolution equation explains how baseline sales of a brand evolve over time under the influence of marketing activity and brand exits:

$$\alpha_{ist} = \delta_{is} + \lambda_{is}\alpha_{ist-1} + \mu_{is}Z'_{ist} + \gamma_{is}BE_{ist} + \omega_{ist} \qquad (7)$$

where $\alpha_{ist-1}$ is the lagged baseline sales. $Z_{ist}$ is a regressor matrix which includes variables for the observed marketing activity of the focal brand. The vector BE$_{ist}$ includes a step function- a dummy variable, which takes the value of 1 after the brand exit.

To be estimated parameters include the base sales $\delta_{is}$ and the carry-over coefficient $\lambda_{is}$ which captures the speed of adjustment (i.e., when $\lambda_{is} = 0$, an exit's effects occur immediately, as $\lambda_{is}$ approaches to 1, the effects evolve in a more gradual manner), $\mu_{is}$ which captures the effect of marketing activity of the focal brand on baseline sales, and $\gamma_{is}$ which captures the effect of brand exit on baseline sales. We assume the disturbance term to be normally distributed and independent across brands, stores, and time ($w_{ist} \sim N(0,W_{is})$).

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[3] Note that it is also possible to model the dynamic effect of brand introductions. However, the focus of this paper is to find the effect of brand exits on sales and relate this effect to the similarity of brands and post-exit strategies of the incumbent brands. We refer to van Heerde, Mela, & Manchada (2004) and van Heerde, Srinivasan, & Dekimpe (2010) for a detailed discussion of the dynamic effects of new products and innovations.

In sum, the evolution equation asserts that exits affect incumbent brand's baseline sales. This effect persists into the future through the carry-over coefficient. Sales will adjust gradually with a speed depending on evolution equation parameters (see challenge#2).

To be estimated parameters of Equation 6 and Equation 7 are brand and store specific. To accommodate heterogeneity in response across brands and exits, we shrink each parameter other than the effect of brand exits on baseline sales to a common mean ($\sigma$) and allow for variation around this mean. We assume all disturbance terms to be normally distributed ($u \sim N(0,U)$).

$$\begin{bmatrix} \beta_{is} \\ \delta_{is} \\ \mu_{is} \\ \lambda_{is} \end{bmatrix} = \begin{bmatrix} \sigma_\beta \\ \sigma_\delta \\ \sigma_\mu \\ \sigma_\lambda \end{bmatrix} + \begin{bmatrix} u_\beta \\ u_\delta \\ u_\mu \\ u_\lambda \end{bmatrix} \qquad (8)$$

*3.2.2 The effect of brand exits on baseline sales*

Our model relates the change in baseline sales due to exits with similarity between brands on a multidimensional attribute space (see challenge#3) and post-exit marketing efforts of the incumbent brand (see challenge#4). We further explain the variation in sales response with market shares of the incumbent brand and the deleted brand. The inclusion of market shares as a driver is consistent with the previous research in assortment reductions which suggest that the sales response to a reduction depends on the market share of the eliminated item (Boatwright & Nunes, 2001) and of retained brands (Zhang & Krishna, 2007). The baseline sales response to an exit is formulated as follows:

$$\gamma_{is} = \eta_{0j} + \sum_{j=1}^{2} \eta_{1j} MS_{jis} + \sum_{j=1}^{3} \eta_{2j} PES_{jis} + \sum_{j=1}^{J} \eta_{3j} S_{jis} + \varepsilon_{is} \qquad (9)$$

We name this equation as 'exit response equation'. It explains the variation in response to a brand exit across brands and stores. $MS_{jis}$ is the average market share of the

incumbent brand (j=1) and the deleted brand (j=2) within the store where the exit took place. $PES_{jis}$ are three variables for post-exit strategies: the frequency of the focal brand's price-oriented promotions (j=1), the frequency of the focal brand's non-price oriented promotions (j=2), and the changes to the number of the focal brand's products (j=3) in the post-exit period. $S_{jis}$ are variables that indicate the similarity between the focal brand *i* and the dropped brand in store *s*. We elaborate on how similarity between two brands is constructed in the next sub-section. We assume all disturbance terms to be normally distributed ($\varepsilon \sim N(0,\Sigma)$).

### 3.2.3 *Formulating similarity between two brands*

Measuring similarity between two brands is complicated by the fact that each brand hosts multiple SKUs within the brand. Furthermore, each SKU represents a combination of attribute levels. Therefore, our model formulates similarity between two brands based on similarities of their SKUs.

Representing each SKU by an attribute vector and the brand as a set of attribute vectors, our formulation uses a nearest neighbor approach to match each element of an attribute vector in one set to another element in an attribute vector from the other set. This gives the smallest distance between each element of the vector pairs from different sets. In other words, when brand Y is deleted for example, the procedure matches an SKU of the deleted brand Y to the most similar SKU of brand X for each attribute and then does the same for all SKUs of the deleted brand Y. Next, these similarities are weighted by the relative importance of each SKU. Weights of SKUs are computed according to relative contribution of each SKU to the sales of the deleted brand Y in the pre-exit period.

To formulate the similarity measure between two brands, let X denote an incumbent brand and Y denote a removed brand with $N_X$ and $N_Y$ SKUs, respectively. For each brand, we define a vector set, whose elements are the SKUs of that brand (i.e., $X = \{x_1, x_2, \dots, x_{N_X}\}$ and $Y = \{y_1, y_2, \dots, y_{N_Y}\}$). Moreover, we assume each SKU is defined as an attribute vector with a set of attribute values $A = \{a_1, a_2, \dots, a_{N_A}\}$ where there are $N_A$ number of attributes. For example, if brand X has only two SKUs ($x_1$ and $x_2$) and SKUs are a unique combination of two attribute levels ($a_1$ and $a_2$), then the set of vector attributes will have two elements (i.e., $X = \{x_1, x_2\}$) and each element represents an attribute vector (e.g., $x_1 = \{x_{1a_1}, x_{1a_2}\}$; $x_{2A} = \{x_{2a_1}, x_{2a_2}\}$). The similarity between two vector sets for attribute a is given by;

$$BS(X,Y)_a = \sum_{y \in Y} w_y \left(\max_{x \in X}\{IS(x_a, y_a)_a\}\right) \qquad (10)$$

where $x_a$ is the attribute level of SKU x for attribute $a$, $y_a$ is the attribute level of SKU y for attribute $a$, and $IS(x_a, y_a)_a$ represents item similarities between SKU x and SKU y for attribute $a$. The nearest neighbor to item y is given by $\max_{x \in X}\{IS(x_a, y_a)_a\}$ which is the similarity score of SKU y for attribute $a$. The score is weighted $w_y$ the weight of SKU y.

Equation 10 requires us to find item similarities between SKUs. We used a similar formulation to that of Rooderkerk et al. (2013) to calculate item similarities. Consistent with the frequency theory (e.g., Parducci, 1965; Parducci & Wedell, 1986), the formulation takes into account the distribution of the attribute levels in the assortment. The formulation makes a distinction between nominal (e.g., color) and metric (e.g., volume) attributes:

$$IS(x_a, y_a)_a =$$

$$
\begin{cases}
I\{x_a = y_a\} * \left(1 - \frac{1}{N_s} * \sum_{\substack{r \in R_t \\ r \neq X,Y}} \sum_{c \in C} I(c_a = y_a)\right) & \text{if } a \text{ is nominal} \\
1 - \left(\frac{1}{N_s} * \sum_{\substack{r_t \in R_t \\ r_t \neq X,Y}} \sum_{c \in C_t} I(\min\{x_a, y_a\} \leq c_a \leq \max\{x_a, y_a\})\right) & \text{if } a \text{ is metric}
\end{cases}
\tag{11}
$$

where R is the vector set of all competing brands and C is the set of all SKUs of each competing brand of vector R. $x_a$, $y_a$, $c_a$ represent, respectively, the attribute levels of SKU x of brand X, SKU y of brand Y, and SKU c of competing brand C for attribute *a*. I(*) is an indicator function which takes the value of 1 if the logical argument is true, and 0 otherwise. Consequently, for a nominal attribute, the term $\sum_{\substack{r \in R \\ r \neq X,Y}} \sum_{c \in C} I(c_a = y_a)$ represents how many SKUs of competing brands share the same attribute level with SKU y for attribute *a*. For a metric attribute, the term $\sum_{\substack{r \in R \\ r \neq X,Y}} \sum_{c \in C} I(\min\{x_a, y_a\} \leq c_a \leq \max\{x_a, y_a\}$ represents how many SKUs of competing brands have an attribute level between attribute levels of item x and y. $N_s$ is the total number of SKUs of all competing brands in store s.

The above formulation ensures that item similarity score is bounded below by 0 (minimum similarity) and above by 1 (maximum similarity). For nominal attributes, the similarity score decreases with the fraction of available SKUs of other brands which also share the same attribute level. More specifically, if two SKUs do not share the same attribute level, similarity is 0. If two SKUs share the same attribute level and there is no other SKU of competing brands with common attribute level, similarity is 1. If two SKUs share the same attribute level and all other SKUs of competing brands also share the same attribute level, then similarity is 0.

Similarly, for metric attributes, the similarity score decreases with the fraction of available SKUs of competing brands which has an attribute level between attribute levels of item x and item y. If there is no other SKU of competing brands which has an attribute level between levels of two SKUs, then similarity is 1. If all SKUs of competing brands have an attribute level between levels of two SKUs, then similarity is 0.

*3.2.4 Model estimation*

We estimate equations using the Gibbs sampling procedure. We use forward-filtering, backward-sampling algorithm (see Carter & Kohn, 1994; Frühwirth-Schnatter, 1994) to obtain the time varying intercept estimates. Assuming a diagonal error covariance matrix for both observation and evolution equations, we place inverse Gamma prior on diagonal elements of matrices. We place normal priors on other parameters.

**3.3   Data**

To answer the research questions posed earlier, we estimate the model described in Section 3.2 using the IRI academic dataset (Bronnenberg et al., 2008). The data are from the upstate New York area and include the stores in Buffalo, Rochester, and Syracuse. The data span the eleven year time period (573 weeks) from January 2001 to December 2011. The data include weekly sales, sales promotions (price reductions, feature, and displays), and product attributes for SKUs in different categories. To see whether we can replicate our findings, we applied our model to two different product categories: deodorant and milk.[4]

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[4] The milk product category excludes non-dairy milk substitutes (e.g., coconut/soy/rice/almond milk).

We aggregate the SKU-store level data to brand-store level, as we are interested in the effects of the removal of a brand from a store on the sales of other brands within that store. The data maps each SKU to a brand (e.g., Axe). We combine sub-brands which are carrying a common parent brand name (e.g., Old Spice High Endurance, Old Spice High Endurance Red) into a single brand and named it with the parent brand name (e.g., Old Spice). Following the aggregation we obtain brand-store level data from 73 stores for 55 brands in the deodorant category and 35 brands in the milk category.

### 3.3.1 Identification of brand exits

Both markets in our dataset are characterized by frequent changes in the set of brand alternatives due to seasonal brands and stock-outs. We develop an algorithm to systematically and accurately identify and separate brand exits from short-term (or temporary) unavailability of brands.

For each store in our dataset, we first find brands which disappear from the store for at least 2 years. Next we check whether the disappearing brand is regularly sold in the store for the 2-year period before the exit and filter out brands which are seasonal and/or available for only a limited period of time. If a brand is available in a store at least for 75% of the time in the 2-year period, we classify it as a candidate deleted brand. We consider other brands as seasonal or an unsuccessful new brand. These excluded brands are introduced to the market for only a very short period of time and removed from the market before establishing a customer base.

For each candidate exit, we specify two time windows: pre-exit and post-exit. Pre-exit window spans a period of 13 weeks (a quarter) prior to the week the brand first disappears from the store. Post-exit window spans a period of 13 weeks starting from the week of exit.

We screen all candidate exit events to check whether multiple brands disappear from the same store in the pre-exit and post-exit period. A major assortment reduction, for example, may cause multiple exit events which take place simultaneously. When two or more brands are deleted close to each other over time, surviving brands will respond to multiple exits simultaneously. We filter out these exit events from our analysis and focus on isolated exit events (i.e., there is no other exit in the pre-exit and post-exit period) for two reasons: First, the model identifies the effect of an exit on sales of an incumbent brand more accurately when there is no confounding exit event. Second, one of our goals is to examine whether exit specific factors (e.g., the similarity between a focal brand and a removed brand) influence the incumbent brand's sales response to the exit. When surviving brands respond to multiple exits simultaneously, the observed effect is likely to be misattributed to exit specific factors.

We use further criteria for identifying the final list of exits. We check whether missing store data appear frequently in the post-exit period. We filter out exits when there is a missing store data rate higher than 25% in the post exit period for two reasons: First, frequent missing data makes it difficult to identify the exact time of a brand exit. Second, even if we accurately identify the time of an exit, frequent missing data in the post-exit period causes difficulties in understanding how sales response to brand exits adjust over time and how post-exit strategies influence the sales response to brand exits.

By applying the algorithm described above, we identify a total number of 18 exit events by 3 brands in the deodorant category and 78 exit events by 11 brands in the milk category. Table 6 displays the descriptive statistics on brand exit events.

**Table 6: Descriptive statistics for exit events**

| Statistic | Deodorant | Milk |
|---|---|---|
| Total Number of Exit Events | 18 | 78 |
| Total Number of Incumbent Brands | 312 | 243 |
| Average Market Share of Removed Brands | 1.11% | 1.53% |
| Average Total Market Share of Incumbent Brands | 96.62% | 96.07% |
| Average Weekly Sales of Incumbent Brands | 19.124 | 9.946 |
| *Variance of Weekly Sales of Incumbent Brands | 123.972 | 10.121 |

*Note: Variances of Incumbent Brands' Weekly Sales are averaged across brands.

On average, the market share of a deleted brand is 1.11% in the deodorant category and 1.53% in the milk category. For each exit event, we find the incumbent brands in the store where the exit took place. We focus on brands which are regularly available in the store for the 4 year period (208 weeks) centered at the time of exit (104 weeks before the exit and 104 weeks after the exit). We filter out incumbent brands which are not available in the store at least for the 75% of the observed time period. These brands are seasonal and available for only a limited period of time. We identify 312 incumbent deodorant brands (on average there are 17.33 incumbent deodorant brands in a store) and 243 incumbent milk brands (on average 3.115 incumbent milk brands in a store). The incumbent brands included in our analyses together account for 96.6% of the total volume sales in deodorant category and 96.1% of the total volume sales in milk category.

*3.3.2 Variables*

For each exit event we identify, we construct variables for incumbent brands for a 4-year period centered at the exit time. Table 7 displays the variables and their operationalization.

**Table 7: Variables and operationalization**

| Equation | Matrix Form | Variable | Operationalization |
|---|---|---|---|
| Observation | $Sales_{ist}$ | Sales | The sum of sales of all SKUs of an incumbent brand in a given week (standardized to an average exit event) |
| | $X_{ist}$ | Price Oriented Sales Promotions | Indicator variable, takes the value 1 if there is a price reduction greater than 5%, 0 otherwise. |
| | | Non-Price Oriented Sales Promotions | Indicator variable, takes the value 1 if there is a feature and/or display promotion without a price reduction, 0 otherwise. |
| | | New Brands | Staircase function. Total number of new brands introduced in the store at or before a given week. |
| | | Seasonality – I | Sine function ($\sin\frac{2\pi t_2}{T}$). |
| | | Seasonality – II | Cosine function ($\cos\frac{2\pi t_2}{T}$). |
| Evolution | $\alpha_{ist-1}$ | Lagged Baseline Sales | Lagged values of the dependent variable in evolution equation. |
| | $Z_{ist}$ | Price Oriented Sales Promotions | Indicator variable, takes the value 1 if there is a price reduction greater than 5%, 0 otherwise. |
| | | Non-Price Oriented Sales Promotions | Indicator variable, takes the value 1 if there is a feature and/or display promotion without price reduction, 0 otherwise. |
| | $BE_{ist}$ | Brand Exit | Step dummy, takes the value of 1 after brand exit. ($BE_{ist}=0$ for $t<=104$, $BE_{ist}=1$ for $t>104$). |
| Exit Response | $MS_{jis}$ | Market Share of the Focal Brand | The weekly market share of the focal brand averaged over 208 weeks (before and after the exit). |
| | | Market Share of the Deleted Brand | The weekly market share of the deleted brand averaged over 104 weeks (before the exit). |
| | $PES_{jis}$ | Change in Brand Assortment Size | The difference between the incumbent brand's total number of SKUs in the post-exit and pre-exit period. |
| | | Price Promotion Frequency | The ratio of weeks with a price promotion in the post-exit period. |
| | | Non-Price Promotion Frequency | The ratio of weeks with a non-price promotion in the post-exit period. |
| | $S_{jis}$ | Similarity A | Similarity scores for attribute A (A=1:5 as there are 5 attributes for products in each category). |
| | | Price Difference | The absolute value of the difference between the price of the deleted brand (averaged over the pre-exit period) and the incumbent brand (averaged over the post-exit period). |
| | | Price Level | Indicator variable, takes the value of 1 when price of the incumbent brand (averaged over the pre-exit period) is higher than price of the deleted brand (averaged over the post-exit period), 0 otherwise. |

The dependent variable of the observation equation (Equation 6) is the sales volume of an incumbent brand. We first calculate the sum of sales of all SKUs of that incumbent brand in a given week. The sales of incumbent brands for each exit event are then

standardized to an average event to remove variation across stores where the event took place. For each exit, we find the total sales in the store over the 4 year period (208 weeks) centered at the time of exit. Then, total store sales are averaged over all exits in the category. We divide an incumbent brand's sales in a given week in a store by the total sales in that store and then multiply it by the average total store sales.

The observation equation (Equation 6) states that sales are affected by a number of variables including price and non-price promotions of the focal brand, new brand introductions, and seasonality. We use indicator variables for the price and non-price oriented promotion activity. The price promotion variable indicates whether there is a price reduction equal or greater than 5%.

We combine feature and display promotions into a compound variable named 'non-price oriented promotion'. The data on non-price oriented sales promotion indicates whether there is a display and/or feature without a price discount. We control for new brands by applying a staircase function. It takes the value of 0 when there is no brand introduction and it increases by 1 after each introduction. The variable indicates the total number of new brands introduced to the market at or before a given week. We identify introductions using an algorithm similar to the one we use to identify brand exits. We control for seasonal patterns by applying sine and cosine functions ($\sin\frac{2\pi t_2}{T}$ and $\cos\frac{2\pi t_2}{T}$).[5]

The evolution equation (Equation 7) states that baseline sales evolve under the influence of marketing activity (price and non-price oriented promotions) and change and adjust to a new level after a brand exit. The dependent variable is the time-varying intercept in the observation equation. For marketing activity, we employ the same variables we used

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[5] $t_2$ indicates the week of the year (e.g., $t_2$=1 at the first week of the year). T indicates the total number of weeks in a given year.

in the observation equation. To indicate the brand exit, we use a step dummy which takes the value of 1 after the exit (t>=105).

The exit response equation (Equation 9) relates the effect of brand exits to market shares of the deleted and incumbent brand, the post-exit strategies of the incumbent brand, and the incumbent brand's similarity to the deleted brand. We measure market share of the incumbent brand as the average weekly market share in the store where the exit took place.[6] We measure the market share of the deleted brand similarly.[7] We construct three post-exit strategy variables. To operationalize changes in the total number of available product alternatives of a brand after an exit, we compute the difference between the incumbent brand's total number of SKUs in the post-exit and pre-exit period. We use the ratio of weeks with a price promotion (non-price oriented promotion) in the post-exit period as a measure of post-exit price promotion frequency (non-price oriented promotion frequency). We detail the operationalization of similarity variables in the next subsection.

Table 8 displays the average weekly sales, incumbent brands' average assortment sizes, and promotion frequencies of incumbent brands before and after the exit. In both categories, incumbent brands experience their lowest average sales in the pre-exit period. Declining sales may very well be one of the drivers of the brand exits but we should note that a variety of factors (e.g., frequency of price promotions) may influence the average sales figures in the table. Incumbent brands enjoy higher average sales in the post-exit period then they do in the pre-exit period (2.64% for deodorant brands and %1.45 for milk brands). In the deodorant category, incumbent brands further increase their average sales in the subsequent period. In the milk category, however, the average sales decrease after in

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[6] The weekly market share of the incumbent brand in a store is averaged over 208 weeks.
[7] The weekly market share of the deleted brand in a store is averaged over 104 weeks.

the subsequent period. The data show that incumbent brands increase the number of SKUs in the post-exit period but there seems no consistent pattern in promotion frequencies before and after the exit.

**Table 8: Average weekly sales, assortment sizes, and promotion frequencies before and after the exit**

| Category | Statistic | Pre-exit | | Post-exit | |
|---|---|---|---|---|---|
| | | (t=[1,91]) | (t=[92,104]) | (t=[105,117]) | (t=[118,208]) |
| Deodorant | Volume Sales | 19.384 | 18.339 | 18.823 | 19.018 |
| | Brand Assortment Size | 19.869 | 19.546 | 20.349 | 18.751 |
| | Price Promotion Frequency | 0.273 | 0.222 | 0.272 | 0.246 |
| | Non-Price Promotion Frequency | 0.059 | 0.043 | 0.014 | 0.031 |
| Milk | Volume Sales | 10.065 | 9.982 | 10.127 | 9.796 |
| | Brand Assortment Size | 8.383 | 9.069 | 10.094 | 9.855 |
| | Price Promotion Frequency | 0.306 | 0.327 | 0.245 | 0.318 |
| | Non-Price Promotion Frequency | 0.036 | 0.055 | 0.073 | 0.071 |

Note: Promotion frequencies indicate the frequency of weeks in which the brand engages in promotion as a fraction of 1. Assortment size indicates the average number of SKUs of an incumbent brand.

The variations in sales figures in Table 8 emphasize the importance of our model based approach. An increase (or a decrease) in the sales of incumbent brands in the post-exit period may be due to an exit or a marketing activity. For example, it is unclear whether the 2.64% increase in deodorant sales is due to the exit or the increase in price promotion frequency in the post-exit period. It is also not possible to derive insights into the effect of brand exits on sales over the long run. Our model based approach controls for the short- and long-term effects of marketing activity and allows for gradual adjustment of brand exit effects. Our model further explains the variation in response to exits with post-exit strategies of incumbent brands and their similarity to the deleted brand.

*3.3.3 Attributes, attribute levels, and calculation of similarity scores*

We use the SKU-store level data to compute similarities between the removed brands and incumbent brands. For each incumbent brand, we define a vector set whose elements are the SKUs of that brand available in the store in the post-exit period. For each exit, we define a vector set whose elements are the SKUs of the removed brand available in the store in the pre-exit period. Then for each SKU in these vectors, we define an attribute vector with a set of attribute levels. We define four relevant nominal attributes for products in each category. We treat price as a metric attribute for products in both categories. Table 9 displays these attributes and their levels.

**Table 9: Attributes and attribute levels**

| Category | Attribute | Levels |
|---|---|---|
| Deodorant | Type | Antiperspirant, Deodorant, Other |
| | Form | Spray, Gel/Cream, Solid, Invisible Solid, Roll-on, Pad, Other |
| | Strength | Duration, Performance, Sensitivity, Dryness, Other |
| | Additives | With a Beneficial Additive, Without an Harmful Additive, Other |
| | Price | Metric Attribute |
| Milk | Package | Carton, Plastic, Glass |
| | Process | Homogenized, Pasteurized, UHT, Homogenized & Pasteurized, Homogenized & UHT |
| | Fat Content | Fat Free, Low Fat, Whole |
| | Lactose Content | Reduced Lactose, Regular |
| | Price | Metric Attribute |

We use our formulation given in Equation 10 and 11 to construct our similarity variables. Our price similarity measure relies on the frequency of distribution of prices. For example, when there is no SKU with a price in between the prices of the two focal SKUs, the similarity score is 1. To account for the range of the difference for this metric attribute, we construct a variable named 'Price Difference'. We measure Price Difference as the

absolute value of the difference between the prices of the deleted and incumbent brand.[8] We also control for whether higher and lower priced incumbent brands benefit from the exit disproportionally. The 'Price Level' is a dummy variable and takes the value of 1 (0) when the price of the incumbent brand is higher (equal or lower) than the price of the deleted brand.

## 3.4    Results

We estimate parameters of the Equations 6-9 running the sample chain for 200,000 iterations using a Gibbs sampler (100,000 for burn-in, 100,000 for sampling with a thinning of 20). In the following subsections, we first present the results for parameters of observation equation and evolution equation. Then, we present the results for parameters which explain heterogeneity in response to brand exits.

### 3.4.1 Observation equation parameter estimates

We estimate six parameters in the observation equation for each incumbent brand: a price promotion parameter, a non-price oriented promotion parameter, a brand introduction parameter, two seasonality parameters, and a time-varying intercept for which we specify an evolution equation. We shrink time invariant parameter estimates to a common mean using Equation 8. Table 10 presents the median of the hierarchical means, the median of the estimated hierarchical variances, and 95% credible intervals for time invariant parameters.

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[8] The prices of the incumbent brands are averaged over the post-exit period and the prices of the deleted brands are averaged over the pre-exit period.

**Table 10: Estimates of the observation equation parameters**

| Parameter | Deodorant | | | Milk | | |
|---|---|---|---|---|---|---|
| | Median means (σ) | 2.5th & 97.5th percentile | Median variances (u) | Median means (σ) | 2.5th & 97.5th percentile | Median variances (u) |
| Price Promotion | 7.480 | [6.893; 8.105] | 20.109 | 0.241 | [0.182; 0.311] | 0.107 |
| Non-Price Promotion | 4.873 | [4.171; 5.595] | 13.262 | 0.159 | [0.056; 0.271] | 0.140 |
| Brand Introduction | -0.042 | [-0.286; 0.194] | 0.856 | -0.070 | [-0.136; -0.008] | 0.188 |
| Seasonality 1 | -0.156 | [-0.228; -0.085] | 0.125 | 0.035 | [0.010; 0.062] | 0.028 |
| Seasonality 2 | -0.486 | [-0.566; 0.410] | 0.151 | 0.280 | [0.204; 0.357] | 0.299 |

As expected, brands in both categories enjoy significantly higher sales during weeks in which a sales promotion occurs as the 95% credible intervals for the effect of both price and non-price oriented sales promotions exclude zero in both categories. These results are consistent with earlier marketing research which reported positive immediate effects of sales promotions (Blattberg & Neslin, 1990; Blattberg, Briesch, & Fox, 1995). Milk brands experience a decrease in sales as the number of new brands increases. The effect of new brands can be considered negligible in the deodorant category as the 95% credible interval for the effect includes zero.

The analysis of individual brand level coefficients also suggests similar findings. 99% of deodorant brands and 98% of milk brands have a positive median parameter estimate of price promotions. The 95% posterior interval excludes zero for 94% of deodorant brands and 18% of milk brands. In both categories, 98% of brands have a positive median parameter estimate of non-price promotions. The 95% posterior interval excludes zero for 50% of deodorant brands and 5% of milk brands. No brands experience significantly negative immediate effects of price promotions or non-price promotions. 79% of deodorant brands and 71% of milk brands have a negative median parameter estimate of

new brand introductions, however the 95% posterior interval excludes zero for only 2% of deodorant brands and 11% of milk brands.

The sales exhibit a seasonal pattern in both categories. More specifically, deodorant sales increase during summer months and reach a peak at the 29th week in a 52 week year (around mid-July). Milk sales increase during winter months and reach a peak at the first week of the year.

### 3.4.2 Evolution equation parameter estimates

We estimate five parameters in the evolution equation for each incumbent brand: a constant, the effect of price promotions, the effect of non-price oriented promotions, the effect of brand exit, and the autoregressive parameter which represents the amount of carry-over effects in the baseline sales. We shrink all parameter estimates to a common mean using Equation 8 except for the effect of brand exits. Table 11 presents the median of the hierarchical means, the median of the estimated hierarchical variances, and 95% credible intervals.

**Table 11: Estimates of the evolution equation parameters**

| Parameter | Deodorant | | | Milk | | |
|---|---|---|---|---|---|---|
| | Median means ($\sigma$) | 2.5th & 97.5th percentile | Median variances (u) | Median means ($\sigma$) | 2.5th & 97.5th percentile | Median variances (u) |
| Constant | 6.701 | [6.277; 7.181] | 12.155 | 7.014 | [5.370; 8.669] | 172.188 |
| Price Promotion | -1.018 | [-1.273; -0.776] | 1.076 | -0.031 | [-0.069; 0.009] | 0.038 |
| Non-Price Promotion | -0.251 | [-0.655; 0.170] | 0.957 | 0.003 | [-0.115; 0.126] | 0.201 |
| Carry-over | 0.417 | [0.367; 0.467] | 0.057 | 0.199 | [0.110; 0.318] | 0.044 |

The effect of price promotions on baseline sales is negative. The effect is significant in the deodorant category. The effect crosses zero at about 94th percentile in the milk

category. The effect of non-price oriented promotions can be considered negligible. The median carry-over coefficient suggests that for most brands 90% of the effects on sales materialize within a month. Together these results imply that price promotions have a negative effect on baseline sales and the effect persist into the future. This finding is consistent with the literature on the long-term effects of price promotions (Ataman et al., 2008; Mela, Gupta, & Lehmann, 1997).

The analysis of individual brand level coefficients similarly suggests mostly negative effects of sales promotions in the long-run. 67% of deodorant brands and 65% milk brands have a negative median parameter estimate of price promotions. The individual brand level coefficients for price promotions are significantly positive for 8% of deodorant brands and 4% of milk brands. On the other hand, 30% of deodorant brands and 18% of milk brands experience significantly negative effects of price promotions on baseline sales. 94% of deodorant brands and 75% of milk brands have a negative median parameter estimate of non-price promotions. 16% of deodorant brands realize negative sales effects due to non-price promotions whereas there is no single deodorant brand which significantly benefits from non-price promotions. The effect of non-price promotions is not significant for all milk brands.

### 3.4.3 Error term estimates

We estimate the variances of the error terms for each brand. Table 12 presents the median, minimum, and maximum values for the estimated hierarchical variances across 312 deodorant brands and 243 milk brands.

Across deodorant brands, the variances of the error term in the observation equation range between 2.635 (25th percentile) and 36.136 (75th percentile), with a median of 9.110.

Across milk brands, the observation equation variances range between 0.038 (25th percentile) and 1.560 (75th percentile), with a median of 0.052. The average variance of the observation equation is considerably less than the average variance of incumbent brands' weekly sales in both categories. The average variance of incumbent brands' weekly sales is 123.9 for deodorant brands and 10.1 for milk brands.

In the deodorant category, the variances of the error term in the evolution equation range between 1.798 (25th percentile) and 13.979 (75th percentile), with a median of 4.845. In the milk category, the variances of the error term in the evolution equation range between 0.032 (25th percentile) and 1.452 (75th percentile), with a median of 0.037. The ratio r=W/V indicates relative variation of the evolution equation to observation equation. A very small r ratio leads to a baseline sales at a constant level. The baseline sales display greater variation as r increases. Across deodorant brands, we find that the W/V ratios range between 0.172 (25th percentile) and 0.878 (75th percentile), with a median of 0.565. Across milk brands, the W/V ratios range between 0.858 (25th percentile) and 0.951 (75th percentile), with a median of 0.934.

**Table 12: Estimated variances of error terms**

| Error Term | Deodorant | | | Milk | | |
|---|---|---|---|---|---|---|
| | Mean | Median | Min & Max | Mean | Median | Min & Max |
| V | 60.510 | 9.110 | [0.233; 367.829] | 2.139 | 0.052 | [0.039; 53.876] |
| W | 14.606 | 4.845 | [0.230; 214.223] | 2.036 | 0.037 | [0.029; 35.814] |

*3.4.4 Drivers of response to brand exits*

We relate the effect of brand exits on baseline sales to market shares of the deleted and incumbent brand, the post-exit strategies of the incumbent brand, and the similarity

between product lines of the deleted brand and incumbent brands in exit response equation (Equation 9). Table 13 presents the median and 95% credible intervals.

We obtain mixed results regarding the effect of the market shares of a deleted and an incumbent brand on realignment of brand sales. In the milk category, the response to a brand exit is significantly correlated to the market share of the deleted and incumbent brand. Higher market share incumbent brands tend to gain less after brand exits. Incumbent brands tend to gain more from an exit as the market share of the deleted brand increases. In the deodorant category, however, both effects are negligible. We consider alternative explanations for these effects such as the number of consumers who can be targeted and the rate of store switching after the deletion of high market share brands. We elaborate on these explanations in the next section.

Results suggest that post-exit strategies are mostly effective in claiming higher sales after brand exits and that the effects are consistent across two categories. Increasing an incumbent brand's assortment size and the frequency of non-price oriented promotions both have positive effects on sales response to a brand exit. The effect of price promotions, however, is not significant.

The similarity between a deleted brand and an incumbent brand also influences sales response to brand exits. Incumbent deodorant brands which are similar to the deleted brand on 'type' and 'form' attributes gains more after brand exits. Incumbent milk brands which are similar on 'package' attribute can be considered more likely to gain more after brand exits as the effect crosses zero at about 9th percentile. The effect of similarity on other attributes can be considered negligible.

## Table 13: Drivers of response to brand exits

Panel A - Category: Deodorant

| Parameter | Median | 2.5th | 97.5th |
|---|---|---|---|
| Constant | 0.658 | -0.021 | 1.357 |
| Market Share of the Focal Brand | 0.530 | -2.549 | 3.674 |
| Market Share of the Removed Brand | -17.879 | -48.387 | 12.638 |
| Change in Brand Assortment Size | 0.103 | 0.042 | 0.159 |
| Price Promotion Frequency | 0.171 | -0.299 | 0.630 |
| Non-Price Promotion Frequency | 1.409 | 0.024 | 2.805 |
| Similarity – Type | 1.946 | 0.794 | 3.123 |
| Similarity – Form | 0.983 | 0.398 | 1.557 |
| Similarity – Strength | -0.225 | -1.083 | 0.663 |
| Similarity – Additives | 3.399 | -2.559 | 9.576 |
| Similarity – Price | -0.220 | -0.830 | 0.421 |
| Price Difference | 0.244 | 0.013 | 0.480 |
| Price Level | -0.881 | -1.451 | -0.318 |

Panel B - Category: Milk

| Parameter | Median | 2.5th | 97.5th |
|---|---|---|---|
| Constant | -0.041 | -0.127 | 0.041 |
| Market Share of the Focal Brand | -0.543 | -0.758 | -0.344 |
| Market Share of the Removed Brand | 14.469 | 10.336 | 19.769 |
| Change in Brand Assortment Size | 0.016 | 0.001 | 0.035 |
| Price Promotion Frequency | 0.015 | -0.256 | 0.274 |
| Non-Price Promotion Frequency | 0.347 | 0.028 | 0.681 |
| Similarity – Package | 0.232 | -0.067 | 0.539 |
| Similarity – Process | -0.082 | -0.570 | 0.392 |
| Similarity – Fat Content | 0.027 | -0.191 | 0.247 |
| Similarity – Lactose Content | 0.033 | -0.268 | 0.329 |
| Similarity – Price | -0.110 | -0.367 | 0.157 |
| Price Difference | -0.083 | -0.143 | -0.026 |
| Price Level | -0.157 | -0.404 | 0.091 |

The median values of the hierarchical variances are 0.895 (deodorant) and 0.261 (milk).

We obtain contradicting results for the effect of price difference and price level. In the deodorant category, the magnitude of price difference has a positive and significant effect on sales response to brand exits. Results further show that lower priced incumbent brands tend to gain more than higher priced ones. In the milk category, however, the effect of price difference on exit response is negative and significant. This difference can be attributed to category specific features which influence consumers' price sensitivity. We provide a more detailed explanation to this mixed finding in the next section.

## 3.5    Discussion of Findings and Implications

Our results reveal who benefits from brand exits and why. In this section, we first point out and briefly discuss a number of questions which we address in this study. Then, we discuss how answers to these questions help managers better manage their brands to maximize their benefits from brand exits.

### 3.5.1 Discussion of findings

*Do higher market share brands tend to gain more from brand exits?* High market share brands enjoy greater visibility, familiarity, and awareness. Therefore, one might expect larger brands to claim a higher portion of the untapped demand after a brand exit given that they would make an easy choice for consumers who want to avoid the costs of searching a new alternative. However, our results do not validate such an expectation. In fact, we find that smaller brands tend to gain more after a brand exits in the milk category. A possible reason behind this finding is that consumers may already have a few beliefs about larger brands before the exit as these brands are more visible and more familiar. The exit may encourage customers to explore and discover new brands rather than switching to an alternative,

which was not favored in preference to the deleted brand prior to the exit. Such a behavior is likely to be observed when purchasing a milk product because milk is more of a search good and it requires few trials to be evaluated (e.g., consumers can learn the taste of a particular milk product only after one trial). It is a low involvement category with lower brand variations in quality. Therefore, the risks and information costs are low in the milk category and consumers can more easily switch to a smaller and less familiar brand.

*Do brands tend to gain more when deleted brands have higher market shares?* Two opposing forces may be at work in determining the effect of deleted brand's market share on sales response to brand exits. First, and most obvious, the deletion of a larger brand will free up a larger amount of demand. There will be higher number consumers who cannot find their favorite product in the store; therefore there will be more consumers who can be targeted by incumbent brands. Second, higher market share brands enjoy significantly greater loyalty (Fader & Schmittlein, 1993). They attract more buyers than small brands and their buyers make more frequent purchases of these brands. If large brands command greater loyalty, then deletion of these brands may drive consumers to switch stores rather than to switch brands within a store. Our results imply that the former effect outweighs the latter one in the milk category as incumbent brands enjoy bigger gains when larger brands are deleted. In the deodorant category, however, the effect is negligible. A possible explanation for this difference across two categories is that the loyalty effect is also profound in the deodorant category because of the low purchase incidence for deodorant products. Milk can be considered as a basic daily consumption product with high purchase frequency, whereas deodorants have a medium to low purchase frequency. Given that consumer loyalty increases as category purchase incidence decreases (Stern & Hammond, 2004), consumers

may be less willing to switch to another brand after an exit in a low purchase incidence category if the deleted brand is available in another store.

*Are post-exit marketing strategies successful in picking up a larger portion of a deleted brand's sales?* Consumers of the deleted brand, who now faced with the unavailability of their preferred brand, may look for other brand alternatives within the category. Marketing activity in the post-exit period may attract some of these consumers. For example, sales promotions stimulate interest, encourage trial, and attract brand switchers. Our results imply that non-price oriented sales promotions and increasing brand's product line in the store are effective in attracting consumers of the deleted brand. Price promotions, however, do not help in claiming a larger share of removed brand's sales in the long run. These findings are consistent with, and complement, earlier marketing studies which empirically investigate the long run effects of promotions and marketing strategy on sales. Ataman et al. (2010) documented a positive effect of line length and a negative effect of discounting on base sales. Ataman et al. (2008) found that line length and feature/display promotions increases the market potential of a new brand whereas the effect of discounting is negative.

*If similar brands are indeed better positioned to pick up the sales of a deleted brand, similarity on what underlying product attributes are most critical in attracting consumers of the deleted brand?* Considering that consumers of the deleted brand develop tastes and preferences for certain attribute levels of that brand, they can look for the same or similar attribute-levels in other brands when their preferred alternative is not present. Therefore, an incumbent brand which is similarly positioned to the deleted brand stands to benefit from the exit disproportionally. Our results show that similarity on certain attributes positively influences the gain from brand exits. Similarity in terms of type and form brings bigger gains for incumbent deodorant brands. The gains of incumbent milk brands increase with package

similarity. These findings are consistent with those of Wiebach & Hildebrandt (2012) who showed that choice probability of a similar brand increases disproportionally after a brand delisting.

*What is the effect of price similarity on realignment of sales after exits? Are similarly priced brands more or less likely to benefit from brand exits?* Our results indicate that price similarity, which is based on the frequency of distribution of prices, has a negligible effect on the redistribution of sales after a brand exit. However, we find that deodorant brands tend to gain more after brand exits as the gap between their prices and the price of a deleted brand increases. In the milk category, however, brands which are priced closely to the deleted brand tend to gain more. The mixed results across categories can be explained with the category-specific features that may affect consumer sensitivity to uncertainty about product attributes and therefore price sensitivity. For example, deodorant is perceived more as an experience good (positive or negative consequences of deodorant may not be realized until long use), whereas milk is perceived more as a search good. Therefore, purchase decisions in these two categories may involve different levels of uncertainty about product attributes. Consumers become more price seeking or price aversive if information on product attributes decreases (Tellis & Gaeth, 1990). Consumers may engage in more price seeking (choosing the highest price brand to maximize expected benefits) or more price aversion behavior (choosing the lowest price to minimize immediate costs) when they make switching decisions in the deodorant category because of higher uncertainty on experiential product attributes. Therefore, deodorant brands may gain more after brand exits as the gap between their prices and the price of a deleted brand increases.

*Does the redistribution of demand after an exit occur instantaneously or gradually*? Considering that consumers may shop around for a while after exits till they find their new favorite

brand, we allowed for gradual adjustment of brand exit effects. Our results show that 90% of the effects on sales materialize within two weeks in the milk category and within 4 weeks in the deodorant category. A possible explanation to this difference in adjustment rate is that deodorant products have lower purchase incidence and longer inter-purchase time than milk products. Therefore, it may take longer for a consumer to find the new favorite brand in the deodorant category.

### 3.5.2 How to manage brand exits

Our findings provide a number of insights to owners of deleted brands. First, managers can forecast how excess demand will be redistributed among existing brands using our model. A thorough understanding of what brands are better positioned to pick up the sales of a deleted brand would lead to a wiser and more rational brand deletion decisions. For example, our model can aid a growing number of companies which simplify their brand offerings within a brand portfolio rationalization program. These firms cut some brands from their portfolios with the expectation that the ones they retain can claim the sales of the deleted ones. However, most brand deletion attempts do fail and rationalizing firms realize a lower level of sales after deletions (Kumar, 2003). Using our model they can assess whether and to what extent retained brands in their portfolio can claim the sales of deleted brands. Second, our model assesses the effects of post-exit strategies on incumbent brands' response to brand exits. Firms which are simplifying their brand offerings often allocate resources of the deleted brands to retained brands (Varadarajan et al., 2006). Our findings indicate that increasing non-price promotion frequency and the number of brand's products in the store are sound investments whereas increasing price-oriented promotions is likely an unworthy investment.

Retailers, which should make necessary delisting decisions to free up shelf space for their expanding private label offerings, can similarly benefit from our model and findings. Understanding drivers of demand redistribution is a principal component of delisting decisions as profit margins can vary by brand. Retailers would also be able to accurately identify largely redundant brand offerings by foreseeing brand switching patterns.

Our findings provide insights to managers of competing brands on how to best manage their product portfolios to meet the freed up demand and how to focus their marketing efforts on where it will have the most impact following a brand exit. For example, competing brands can change the set of product alternatives within a store to look more similar to the deleted brand on critical product attributes.

## 3.6   Concluding Remarks

The increasing frequency of brand exits begs the question whether and which brands benefit from the exit and why? Accordingly, this study develops a model to examine the long-term effects of brand exits on sales and identify the drivers of excess demand redistribution following an exit. In our application, we find that two post-exit strategies – increasing an incumbent brand's assortment size and non-price promotion frequency – are successful investments to pick up the sales of a removed brand. We further show that incumbent brands, which are similar to the deleted brand on certain attributes are better positioned to claim higher sales.

Our findings are subject to a number of caveats, limitations, and extensions. First, in our empirical application we examine exits in milk and deodorant categories taking place in stores in the upstate New York area. Additional research can extend our findings by studying the effect of brand exits across multiple product categories and multiple

geographies. For example, across two categories we examine in this article, we report different effects of market shares and price similarity on sales response to exit. These differences can be related to category specific factors through an examination of exit events in multiple product categories. Second, we use brand-store level data which limits our ability to delve into consumer preferences and decision drivers. Further research can provide profound insights on how consumers' preferences change after an exit. Third, we focus on identifying the underlying factors of the redistribution of demand that frees up following a brand exit and we are agnostic about who is behind the delisting decision (manufacturer or retailer). Further research can make a distinction between decision makers and provide deeper insights for retailers and manufacturers. Fourth, we focus on isolated exit events in this study. As manufacturers and retailers frequently update their brand offerings, multiple exits and/or introductions might occur simultaneously. Future research can examine the sales response to multiple events taking place simultaneously. Fifth, we make several assumptions throughout this analysis to enhance the feasibility. For example, we assumed that the short- and long-term effects of control variables (e.g., marketing activity, seasonality) do not evolve over time. We also do not control for the dynamic effects of each new brand introduced to the market. The effect of brand introductions could also be modeled similar to brand exits. We made these assumptions for parsimony as increasing the number of time-varying parameters –hence the number of state equations- increases computational complexity and slows convergence time dramatically.

Despite these limitations, we believe to have contributed to enhance the understanding on the long-term effects of brand exits by analyzing the drivers of excess demand redistribution following the exit. Brand exits –just like brand introductions– have

become increasingly common. We hope our study encourages additional research on brand

exits.

## APPENDIX

## Model Estimation

The observation equation (Equation 6) and the evolution equation (Equation 7) can be written for each brand i, each store s, and each time t as follows:

$$Y_{ist} = \theta_{ist} + X_{ist}\beta_{is} + v_{ist},$$

$$\theta_{ist} = G_{is}\theta_{ist-1} + h_{ist} + w_{ist},$$

$$v_{ist} \sim N[0, V_{is}], \quad w_{ist} \sim N[0, W_{is}], \quad (\theta_{is0}|\, D_{is0}) \sim N[m_{is0}, C_{is0}],$$

where $\theta_{ist} = \alpha_{ist}$ , $G_{is} = \lambda_{is}$, $h_{ist} = \delta_{is} + \mu_{is}Z'_{ist} + \gamma_{is}BE_{ist}$.

The following algorithm, dropping the brand subscript i and store subscript s for simplicity, describes how we estimate the model parameters. We repeat Step 1 to 6 for each brand at each store and then we shrink these brand specific parameters in Step 7a and 7b:

**Step 1:**    $\theta_t|\, Y_t, V, W, \beta, G, h_t$.

Following the Forward-filtering backward-sampling algorithm (Carter & Kohn, 1994; Frühwirth-Schnatter, 1994), we first forward filter to obtain the moments $m_t$ and $C_t$ for $t = 1, \dots, T$.

The posterior for $\theta_{t-1}$ :    $(\theta_{t-1}|\, D_{t-1}) \sim N[m_{t-1}, C_{t-1}]$.

Prior for $\theta_{t-1}$ :    $(\theta_t|\, D_{t-1}) \sim N[a_t, R_t]$    where    $a_t = Gm_{t-1} + h_t$   and $R_t = GC_{t-1}G' + W$.

One-step forecast :    $\tilde{Y}_t|\, D_{t-1} \sim N(f_t, Q_t)$    where $\tilde{Y}_t = Y_t - X'_t\beta$,    $f_t = a_t$ and $Q_t = R_t + V$.

Posterior for $\theta_t$ :    $\theta_t|D_t \sim N[m_t, C_t]$    where    $m_t = a_t + R_tQ_t^{-1}(\tilde{Y}_t - f_t)$, $C_t = R_t - R_tQ_t^{-1}R_t$.

We then sample $\theta_t$ at $t = T$ from  $(\theta_t|D_t) \sim N[m_t, C_t]$. Next, we sample $\theta_t$ backward for $t = T - 1, \dots, 1$ from  $p(\theta_t|Q_{t+1}, D_t) \sim N(q_t^*, Q_t^*)$, where $q_t^* = m_t + B_t(Q_{t+1} - a_{t+1})$, $Q_t^* = C_t - B_tR_{t+1}B'_t$, and $B_t = C_tG'R_{t+1}^{-1}$. We use $m_0 = 0$ and $C_0 = 10$.

**Step 2:**   $V \mid \theta_t, Y_t, \beta$.

We place an inverse gamma prior, with $(n_{v0}/2, S_{v0}/2)$. The full conditional posterior distribution is inverse gamma with $(n_{v1}/2, S_{v1}/2)$ where $n_{v1} = n_{v0} + T$ and $S_{v1} = S_{v0} + \sum_{t=1}^{T} (Y_t - X_t'\beta - \theta_t)'(Y_t - X_t'\beta - \theta_t)$. We select a diffuse prior with $n_{v0}$=3 and $S_{v0}$=0.1.

**Step 3:**   $W \mid \theta_t, \delta, \lambda, \mu, \gamma$.

We place an inverse gamma prior, with $(n_{w0}/2, S_{w0}/2)$. The full conditional posterior distribution is inverse gamma with $(n_{w1}/2, S_{w1}/2)$ where $n_{w1} = n_{w0} + T$ and $S_{w1} = S_{w0} + \sum_{t=1}^{T} (\theta_t - G\theta_{t-1} - h_t)'(\theta_t - G\theta_{t-1} - h_t)$. We select a diffuse prior $n_{w0}$=3 and $S_{w0}$=0.1.

**Step 4:**   $\varphi \mid \theta_t, W, \delta, \mu, \gamma$.

We define $\lambda = \frac{e^{\varphi}}{1+e^{\varphi}}$ and the prior on the parameters is normal with $\varphi \sim N(\underline{\zeta}_\varphi, \underline{o}_\varphi)$. We use a random walk Metropolis-Hastings step to draw $\varphi$. The candidate $\varphi$ at iteration $m$ is generated by $\varphi^{(m)} = \varphi^{(m-1)} + z$ where $z$ is a random draw from $N(0, \kappa I)$. We select $\kappa$ such that the acceptance rate is between 20% – 50%. The candidate $\varphi^{(m)}$ is accepted when $\alpha \geq u$ where $u$ is uniform with $u \sim U(0,1)$ and

$$\alpha = \frac{e^{-\frac{1}{2}(\varphi^{(m)}-\underline{\zeta}_\varphi)'\underline{o}_\varphi(\varphi^{(m)}-\underline{\zeta}_\varphi)}}{e^{-\frac{1}{2}(\varphi^{(m-1)}-\underline{\zeta}_\varphi)'\underline{o}_\varphi(\varphi^{(m-1)}-\underline{\zeta}_\varphi)}} * \frac{e^{-\frac{1}{2}(\theta_t - \frac{e^{\varphi^{(m)}}}{1+e^{\varphi^{(m)}}}\theta_{t-1}-h_t)W_T^{-1}(\theta_t - \frac{e^{\varphi^{(m)}}}{1+e^{\varphi^{(m)}}}\theta_{t-1}-h_t)'}}{e^{-\frac{1}{2}(\theta_t - \frac{e^{\varphi^{(m-1)}}}{1+e^{\varphi^{(m-1)}}}\theta_{t-1}-h_t)W_T^{-1}(\theta_t - \frac{e^{\varphi^{(m-1)}}}{1+e^{\varphi^{(m-1)}}}\theta_{t-1}-h_t)'}}$$

**Step 5:**   $\delta, \mu, \gamma \mid \theta_t, W, \lambda$.

We define $\rho = [\,\delta, \mu, \gamma\,]$ and $K_t = [\,I_t, Z_t, BE_t\,]$. The prior on the parameters is normal with $\rho \sim N(\underline{\zeta}_\rho, \underline{o}_\rho)$. Then, the full conditional posterior is normal with $\rho \sim N(\overline{\zeta}_\rho, \overline{o}_\rho)$ where $\overline{\zeta}_\rho = \overline{o}_\rho \left\{ \underline{o}_\rho^{-1}\underline{\zeta}_\rho + [K_t W_T^{-1}\overline{\theta}_t] \right\}$, $\overline{o}_\rho = \{\underline{o}_\rho^{-1} + [K_t W_T^{-1}K_t']\}^{-1}$, $\overline{\theta}_t = \theta_t - \lambda\theta_{t-1}$ and $W_T = W \otimes I_T$.

**Step 6:**   $\beta \mid \theta_t, V$.

The prior on the parameters is normal with $\beta \sim N(\underline{\zeta}_\beta, \underline{o}_\beta)$. The full conditional posterior is normal with $\beta \sim N(\overline{\zeta}_\beta, \overline{o}_\beta)$ , where $\overline{\zeta}_\beta = \overline{o}_\beta \left\{ \underline{o}_\beta^{-1}\underline{\zeta}_\beta + [X_t V_T^{-1}\overline{Y}_t] \right\}$ , $\overline{o}_\beta = \{\underline{o}_\beta^{-1} + [X_t V_T^{-1}X_t']\}^{-1}$, $\overline{Y}_t = Y_t - \theta_t, V_T = V \otimes I_T$.

**Step 7a:** $\sigma \mid \beta, \delta, \mu, \varphi, U$

In previous steps we estimated brand specific parameters. In this step we shrink the estimates for $\beta, \delta, \mu, \varphi$ across brands. We discuss only the shrinkage of $\beta$. The shrinkage of $\delta, \mu, \varphi$ follows directly.

We place a normal prior on $\underline{\zeta}_\beta$ : $\underline{\zeta}_\beta \sim N(\underline{\pi}_\beta, \underline{\tau}_\beta)$. The full conditional posterior is normal with $\underline{\zeta}_\beta \sim N(\overline{\pi}_\beta, \overline{\tau}_\beta)$ where $\overline{\pi}_\beta = \overline{\tau}_\beta \{\underline{\tau}_\beta^{-1} \underline{\pi}_\beta + [I_i U_{\beta I_N}^{-1} \beta_i]\}$ , $\overline{\tau}_\beta = \{\underline{\tau}_\beta^{-1} + [I U_{\beta I_N}^{-1} I]\}^{-1}$ , $U_{\beta I_N} = U_\beta \otimes I_{I_N}$. $I_N$ indicates the total number of brands. We use $\underline{\pi}_\beta = 0$ and $\underline{\tau}_\beta = 1000$.

We place an inverse gamma prior on $\underline{o}_\beta$ with $(n_{u0}/2, S_{u0}/2)$. The full conditional posterior distribution is inverse gamma with $(n_{u1}/2, S_{u1}/2)$ where $n_{u1} = n_{u0} + I_N$ and $S_{u1} = S_{u0} + \sum_{i=1}^{I_N} (\beta_i - \underline{\pi}_\beta)'(\beta_i - \underline{\pi}_\beta)$. We select a diffuse prior $n_{u0}$=3 and $S_{u0}$=0.1.

**Step 7b:** $\eta \mid \gamma, \Sigma$.

We define $\eta = [\eta_0, \eta_1, \eta_2, \eta_3]$ and $L_i = [I_i, MS_i, PES_i, S_i]$. We place a normal prior on the parameters with $\underline{\zeta}_\eta \sim N(\underline{\pi}_\eta, \underline{\tau}_\eta)$. Then, the full conditional posterior is normal with $\underline{\zeta}_\eta \sim N(\overline{\pi}_\eta, \overline{\tau}_\eta)$ where $\overline{\pi}_\eta = \overline{\tau}_\eta \{\underline{\tau}_\eta^{-1} \underline{\pi}_\eta + [L_i \Sigma_{I_N}^{-1} \gamma_i]\}$ , $\overline{\tau}_\eta = \{\underline{\tau}_\eta^{-1} + [L_i \Sigma_{I_N}^{-1} L_i]\}^{-1}$ , and $\Sigma_{I_N} = \Sigma_\gamma \otimes I_{I_N}$. We use $\underline{\pi}_\eta = 0$ and $\underline{\tau}_\eta = 1000$.

We place an inverse gamma prior on $\underline{o}_\gamma$ with $(n_{\varepsilon 0}/2, S_{\varepsilon 0}/2)$. The full conditional posterior distribution is inverse gamma with $(n_{\varepsilon 1}/2, S_{\varepsilon 1}/2)$ where $n_{\varepsilon 1} = n_{\varepsilon 0} + I_N$ and $S_{\varepsilon 1} = S_{\varepsilon 0} + \sum_{i=1}^{I_N}(\gamma_i - \eta_i L_i)'(\gamma_i - \eta_i L_i)$ where $I_N$ indicates the total number of brands. We select a diffuse prior $n_{\varepsilon 0}$=3 and $S_{\varepsilon 0}$=0.1.

# Chapter 4

# Energizing Sales Through Sponsorships

In recent years, many companies have enthusiastically increased their investments in sports sponsorships. According to a recent survey of IEG Sponsorship Research, total sports sponsorship spending in North America has reached approximately $13 billion in 2013 with an annual growth rate of 6%, exceeding the growth rate of spending on several other elements of the promotional mix such as advertising through traditional media, public relations, direct marketing, and promotions (IEG, 2014a). This growth is partly due to the record breaking economic value of partnerships formed between major professional sports franchises and corporate partners, which see those franchises as a passion point for both their existing and potential customers. For example, General Motors paid $560 million to become the official partner of Manchester United football club, so that they could connect their Chevrolet brand with the passionate supporters of the club all around the world (O'Leary, 2014). Similarly, Dallas Cowboys, a National Football League

(NFL) franchise commonly referred to as 'America's team', recently signed partnership deals with American Airlines, Miller Lite, and Hublot Watches. Through these deals it became the most valuable sports franchise in the world thanks to its annual sponsorship revenues, which exceeds the $100 million mark (Forbes, 2015).

Firms invest substantial amounts in sponsorships for a variety of reasons: to increase brand awareness, to establish and strengthen brand image, and to enhance brand recall, brand loyalty, and sales (Catherwood & van Kirk, 1992; Chien, Cornwell, & Pappu, 2011; Cornwell & Maignan, 1998; Crowley, 1991; Gwinner & Eaton, 1999; Marshall & Cook, 1992). In line with the expectations of firms entering into sponsorship deals, marketing research has shown that sponsorships have resulted in brand identification (Lardinoit & Quester, 2001), enhanced consumer awareness and attitude (Quester & Thompson, 2001), increased brand preference and brand recall (Levin, Joiner, & Cameron, 2001; Nicholls, Roslow, & Dublish, 1999), and improved brand loyalty (Mazodier & Merunka, 2012; Sirgy, Lee, Johar, & Tidwell, 2008). However, there has been an uncertainty whether the positive effects of sponsorship on consumer liking and other behavioral measures also translate into economic value. Yet, few studies have attempted to quantify this economic value of sponsorships, despite the large amounts of money involved. The studies that did address this topic commonly applied event study analyses to assess the firm performance effects of sponsorships but provided mixed findings. Cornwell, Pruitt, & Clark (2005), Cornwell, Pruitt, & van Ness (2001), Miyazaki & Morgan (2001), and Pruitt, Cornwell, & Clark (2004) reported significant positive shareholder returns to sponsorship announcements, while Tsiotsou & Lalountas (2005) found no effect. While the effect of sponsorship on shareholder returns is poorly understood, there is even greater uncertainty regarding the impact on sales, arguably a metric of high relevance to marketing (communications)

practitioners. According to a recent survey on how marketers measure the effectiveness of sponsorships, a substantial percentage of marketers (38%) are dissatisfied with their ability to measure sponsorship effectiveness and most of them (86%) agree that the most valuable metric for measuring the effectiveness of sponsorship is sales (ANA, 2013). Understanding the effects on sales is critical for making decisions on how much to spend on sponsorship fees and on how to manage other promotion mix instruments over the course of the sponsorship.

Accordingly, in this paper we address the value of sponsorship deals by investigating whether firms' partnerships with professional sports franchises actually improve the sales performance of partnering brands. Understanding the sales response to sponsorship will provide the missing link between the positive behavioral results and the mixed effects on stock prices. Next to answering this whether question, we further aim to shed light on a number of key issues explaining how sponsorships affect sales performance. First, studies focusing on longitudinal effects over the course of a sponsorship contract documented that these effects on key metrics such as brand awareness, positioning, recall, and knowledge evolve over time (Armstrong, 1988; Parker, 1991; Quester & Farrelly, 1998). In a similar fashion, we do not expect the effects of sponsorships on sales to materialize instantaneously. Therefore, we aim at understanding how the effect of sponsorships on sales evolves over time. Second, the effect of sponsorship is contingent on franchise-specific factors such as team performance (Cornwell & Coote, 2005; Fisher & Wakefield, 1998; Gwinner & Swanson, 2003; Lings & Owen, 2007; Ngan, Prendergast, & Tsang, 2011; Speed & Thompson, 2000). Following the immediate effects of sponsorships, subsequent positive or negative team performance may spill over to perceptions of brand quality (Pope, Voges, & Brown, 2009). Therefore, we link the effect of sponsorship to team

performance in a dynamic setting. Third, sponsorships do not necessarily work standalone. Advertising affects consumer's sensitivity to sales promotions (Mela et al., 1997). Sponsorships, if considered as a specific form of advertising, may also interact with sales promotions, which may change their effectiveness. Accordingly, we aim to explain whether sponsorships affect sales through changing the effectiveness of sales promotions. Fourth, in order to develop insights for managers of sponsoring brands that are as complete as possible, we examine the effects of sponsorships on competing brands as well. Some of those competing brands and the sponsored brand may be in the same brand family, i.e., they might be marketed under the same parent brand and carry similar sets of values. Practitioners will want to understand whether the effects of sponsorships on sales spill over positively (or negatively) to other brands in their brand portfolios given that those brands are linked to the sponsored brand but also compete with the sponsored brand. Practitioners might also want to evaluate whether a sponsorship can draw sales from competing brands of other firms. Therefore, we explain the differences in sales response to sponsorships across competing brands.

In our empirical study we develop a Dynamic Linear Model (DLM), which examines how a partnership with a major sports franchise affects the sales performance of the partnering brand and competing brands within the product category. We assume that the effects of sponsoring partnerships may evolve over time as a consequence of team performance. We allow sponsorships to influence the effect of sales promotion instruments on sales. Using MCMC techniques, we calibrate the model on store-level data acquired from Information Resources, Inc. (see Bronnenberg et al., 2008).

We evaluate the effectiveness of sponsoring partnerships with major sports franchises in the setting of the NFL teams' beer sponsorship deals. We believe that this setting is

appropriate for four reasons. First, NFL is the most popular annual sporting event in the USA for sports fans, corporate marketers, advertisers, and sponsors. For example, 46 of the top 50 most watched sporting events of 2013 were NFL games (Sports Media Watch, 2013). NFL fans seem to care about sponsorships more than fans of other major professional sports leagues such as MLB, NBA, and NHL (Broughton, 2012). Therefore, NFL and its 32 teams command the highest sponsorship revenues among professional leagues with over \$1 billion (IEG, 2015). Second, several beer brands, including Budweiser, BudLight, Miller Light, and Coors Light, have consistently been among the most active sponsors of NFL teams and among the highest spenders in the sponsorship market for years. They typically sign longer term contracts –e.g., 5 year contracts instead of a single season contract– which allows us to analyze the effects of sponsorships in the long run. Third, most of the partnerships between teams and partnering firms are regulated by the NFL. Therefore, the content of the deals and the rights given to partnering firms do not differ across deals with different franchises. This allows us to analyze and compare the effects of partnership deals with different teams. Fourth, there is a great variation in the strength, success, and popularity of NFL franchises over time due to the short careers of star players, transfers, and injuries. The draft and salary cap system ensure an appropriate level of competitive balance. The changes in team performance over time allow us to analyze how this influences the effects of sponsorships in a dynamic setting.

We believe that the results of our study help marketing (communications) executives of sponsoring brands to better manage their sponsorship strategies by (i) uncovering how the potential effects of sponsorships evolve over the course of the sponsorship contract; (ii) understanding the synergetic effects which might be created by combining sponsorship with other promotional instruments; (iii) foreseeing the risks and returns of team-related

factors which may change over time. Our results, furthermore, help managers of competing brands to better anticipate on how the performance of their brands may be influenced by sponsorship deals as we address the effects of sponsorship on competing brand sales as well.

This chapter is organized as follows. Section 4.1 provides background information on the NFL and on sponsorship deals with NFL franchises. Section 4.2 discusses the literature on sponsorship effectiveness. We present our theoretical framework in the Section 4.3. Section 4.4 describes the data we use in our analyses, while Section 4.5 discusses our model specification. We present the results in Section 4.6 and conclude in Section 4.7 with a discussion of our findings and their implications.

## 4.1 Background: the NFL and Its Sponsorship Deals

We evaluate the effectiveness of partnerships with major sports franchises in the setting of the NFL and its teams' beer sponsorship deals. We previously explained why studying sponsorships in the context of the NFL team's sponsorship deals is appropriate and relevant. Here we provide background information about the NFL, sport franchises competing in the NFL, and characteristics of the NFL's beer sponsorship deals.

### 4.1.1 The NFL and NFL franchises

The NFL is the highest professional American football league in North America. It is composed of 32 franchises and runs a 17-week regular season from Labor Day week to Christmas. The NFL has the highest average attendance of any professional sport (Pudasaini, 2014) and it is by far the most popular sport on TV in the US (Sports Media Watch, 2013). Therefore, it is the most preferred medium for sports sponsorships in North

America. In 2013, it enjoyed more than $1 billion sponsorship revenues up 5.7 percent from the previous year (IEG, 2015). The average NFL team is worth $1.43 billion in 2013, 23% more than a year before. Most active NFL sponsors include beer manufacturers (e.g., Anheuser Busch, MillerCoors); quick service restaurants (e.g., Papa John's Pizza), branded food and beverage manufacturers (e.g., Coca-Cola, Pepsi, Gatorade), cars (e.g., Ford, Toyota), mobile service carriers (e.g., AT&T, Verizon), airlines (e.g., American Airlines, Southwest Airlines), and insurance firms (e.g., Geico, MetLife) (IEG, 2015).

*4.1.2 Beer sponsorship deals*

Forming partnerships with NFL franchises has been a widely adopted promotional strategy among beer manufacturers for years. According to a report of IEG, beer manufacturers are 3.4 times more likely to sponsor the NFL than the average of all sponsors (IEG, 2014b). Anheuser Busch has been one of the biggest spenders on sponsorship deals and has sponsorship agreements with 28 of the 32 NFL franchises. MillerCoors has individual sponsorship deals with 21 franchises. While most franchises have sponsorship deals with multiple beer brands, some franchises enter into an exclusive agreement, which secures the right of a sponsor to be the only company within its product category. MillerCoors has exclusive partnership deals with 4 franchises. In addition to long-time exclusive sponsorship deals with the Dallas Cowboys and the Minnesota Vikings, in 2002 Miller Coors formed partnership deals with two respectable and popular franchises, the Chicago Bears and the Green Bay Packers. MillerCoors' exclusive sponsorship deals with the Bears and the Packers allowed Miller Lite to use the logos and trademarks of the sports franchises and engage in promotional activities within a 75-mile radius of the sponsored teams' home stadiums.

In this study we examine these very two sponsorship cases. We do this for a number of reasons. First, these two partnerships are exclusive deals; therefore, competing beer brands do not have the right to enter into local sponsorship arrangements with the Bears and the Packers. This means that they do not have the right to use those two teams' logos and trademarks in their products, advertisements, and marketing efforts. Second, these deals were signed in 2002, so the time window following the sponsorship deal is long enough to analyze how the effects of sponsorships evolve over time. Third, there has been a strong variation in the strength, performance, and popularity of these two franchises since 2002 which allows us to address the dynamic effect of team performance and popularity.

## 4.2   Literature Review

### 4.2.1 Sponsorship effectiveness

Due to the growing popularity of sponsorship as part of the marketing activities of firms, there is a wide array of research on sponsorship effectiveness. Numerous studies measured sponsorship effectiveness in terms of brand recall. Hansen & Scotwin (1995) found that sponsorships create a brand recall of a magnitude similar to that of advertising, and it becomes even more effective when it is combined with advertising. Several other studies also documented the positive effects of sponsorships on brand recall (e.g., Levin et al., 2001; Nicholls et al., 1999; Turco, 1995). Pope & Voges (2015) analyzed the recall of advertising messages and found that effects of sponsorships and advertising are cumulative. Furthermore, marketing research has also documented positive effects of sponsorships on brand awareness (e.g., Sandler & Shani, 1989), brand image (e.g., d'Astous & Bitz, 1995;

Gwinner, 1994; Hansen & Scotwin, 1995; Otker & Hayes, 1987; Turco, 1995), consumer preferences for the brand (Nicholls, Roslow, & Laskey, 1994), purchase intentions (Cornwell et al., 2005; Olson & Thjømøe, 2009), and brand loyalty (Mazodier & Merunka, 2012; Sirgy et al., 2008). The factors which influence sponsorship effectiveness were also investigated. Several studies showed that sponsorship effectiveness is contingent on team-related factors (e.g., team performance, star players, team image) and fan characteristics (Cornwell & Coote, 2005; Fisher & Wakefield, 1998; Gwinner & Swanson, 2003; Lings & Owen, 2007; Madrigal, 2000; Madrigal, 2001; Smith, Graetz, & Westerbeek, 2008; Speed & Thompson, 2000).

To understand the effectiveness of sponsorship deals for firm performance, a group of studies measured sponsorships' effects on the stock price fluctuations of sponsoring firms following sponsorship announcements. Cornwell et al. (2005) observed an increase in shareholders' wealth due to official product sports sponsorships with five professional sports leagues –NFL, NHL, NBA, MLB, and PGA– in the USA. Cornwell, Pruitt, & van Ness (2001), Miyazaki & Morgan (2001), Pruitt et al., (2004), Spais & Filis (2008) also found increasing shareholder returns due to sponsorship deals. However, studying shareholder returns to 2004 Olympic Games sponsorship announcements, Tsiotsou & Lalountas (2005) found no significant effect on the stock prices of sponsoring firms.

In this paper, we study sponsorship effectiveness in terms of its effects on sales. Although sales is a highly relevant metric to many marketing (communications) practitioners, there has been an uncertainty whether the positive effects of sponsorship on consumer liking and other behavioral measures indeed also translate into positive sales figures. Therefore, our study complements the findings of extant research and enhances the existing knowledge on the economic value of sponsorship deals by providing a missing

link between the behavioral results and the positive effects on stock prices by addressing the question whether positive behavioral effects do also lead to positive sales results, thereby leading to higher firm value.

*4.2.2 The economic value of marketing communications instruments*

Numerous studies in marketing science linked the use of marketing communication instruments to sales. A wide array of research examined the effects of traditional communication elements such as advertising (e.g., Bass & Clarke, 1972; Bass & Leone, 1983; Blattberg & Jeuland, 1981; Hanssens, Parsons, & Schultz, 2003) and sales promotions (e.g., van Heerde, Leeflang, & Wittink, 2000; Zhang, Wedel, & Pieters, 2009). As companies are shifting to alternative communication tools due to the highly cluttered market environment, recent studies focused on some increasingly popular communication tools. Elberse & Verleun (2012) studied the effect of celebrity endorsements on sales and documented a positive effect, which increased with the achievements of the endorsers. Chung et al. (2013) studied the effect of celebrity endorsements on sales by examining the effects of the endorsement deal of Tiger Woods' on the sales of Nike golf balls. They found that there is a both a primary demand effect and a brand switching effect of celebrity endorsements. To the best of our knowledge, the growing literature on the sales effects of marketing communication contains no studies that focus on the sales effects of sponsorship deals. This is despite of the distinctiveness of sponsorship deals as a promotional activity and the fact that the expenditures on sponsorship deals in the past decade have grown at rates faster than expenditures for mass media advertising and sales promotion (Roy & Cornwell, 2003). Therefore, our study complements extant research, which links the use of marketing communication elements to sales.

## 4.3   Theoretical Framework

The sponsorship literature has examined sponsorship responses through different theoretical lenses. However, it has "not adopted any specific framework that could guide investigations of consumers' reactions to sponsorship" (Cornwell & Maignan, 1998, p.14) yet. None of the approaches to sponsorship response models has proven its superiority over others so far (Walliser, 2003). Therefore, in the following subsections we first analyze customer responses to the NFL's beer sponsorship deals by discussing our research problem using three different theoretical frameworks, which are commonly used to explain sponsorship responses. We then discuss how sponsorships might influence the effectiveness of sales promotions.

### 4.3.1 Mere exposure effects

The link between exposures to marketing communications and consumer behavior tools has been extensively investigated as repeated exposures to a stimulus (e.g., pictures, logos, slogans) evoke affective responses (Zajonc, 1968). The mere-exposure effect framework suggests that customers' attitudes towards brands are influenced merely because they are familiar with the brands and repeated exposures to brand-related stimuli generate such feelings of familiarity (Zajonc, 1980). Higher levels of mere-exposure result in higher preferences for the brand (Olson & Thjømøe, 2009) and also a higher brand recall (Bennett, 1999). Additional brand-related information, as well as intervening attributes such as liking, interest, and congruence, is not a necessary condition for creating responses to the stimuli. The mere-exposure effect persists even when initial exposures to brand-related stimuli are incidental (Janiszewski, 1993).

According to this framework we can expect an increased preference for a brand due to sponsorship, which may also translate into higher sales. For low-involvement products, information about only a few attribute levels is usually available and consumers may primarily pay attention to non-product attributes. In the case of beer sponsorship deals, therefore, the repeated exposure to brand-related stimuli is likely to result in favorable attitude changes towards the product and to higher sales.

The mere-exposure effect of sponsorship can further increase with the success of the sponsored team. This is because such teams are more likely to find greater coverage on national and local media as well as on the social media. Greater coverage will lead to a larger mere-exposure effect for two reasons: (i) consumers will be more frequently exposed to brand-related stimuli, and (ii) a higher number of customers will be exposed to brand-related stimuli.

### 4.3.2 Associative learning

A growing body of research considers mere-exposure as a necessary but not a sufficient condition for creating a response to sponsorships. Based on the belief that consumers generate attitudes and feelings towards a brand through the linkage of two stimuli, several marketing studies used associative learning approaches in explaining responses to marketing communication and advertising (e.g., Burke & Edell, 1989; Mitchell & Olson, 1981; Sweldens, van Osselaer, & Janiszewski, 2010). The two dominant approaches to associative learning, both the classical conditioning and the evaluative conditioning have been used in the sponsorship context. Speed and Thompson (2000) used classical conditioning to explain sponsorship responses. According to this view, the consumer links the unconditioned stimulus (the sponsored team) and the conditioned

stimulus (the brand) to learn about one of these through what is known about the other. Therefore, attitudes towards the unconditioned stimulus (the sponsored team), attitudes towards the conditioned stimulus (the brand), and the congruence between the conditioned and the unconditioned stimulus may influence the sponsorship response. Tsiotsou et al. (2014) used evaluative conditioning to explain sponsorship responses. According to this perspective, when a sports team is coupled with a brand, there is a direct effect. Consumers transfer associations from the unconditioned stimulus (the sponsored team) to the conditioned stimulus (the brand) and will extend the features of the team to the brand. The difference between the classical conditioning and the evaluative conditioning is that in the evaluative conditioning, unlike the classical conditioning, the brand does not need to develop a predictive relation with the team.

In the case of NFL's beer sponsorship deals, both the sponsoring brand and the sponsored team are likely to have a favorable image within the geographic reach of the sponsorship. Brands can engage in promotional activities within the 75-mile radius of the sponsored team's home stadium. It is safe to assume that fans of the local teams are predominantly located in those areas and that they mostly have favorable attitudes towards the sponsored team. In other words, consumers living in Illinois are more likely to have positive attitudes towards the Chicago Bears while consumers living in Wisconsin are more likely to have positive attitudes towards the Green Bay Packers. Since we are focusing on the deals of Miller Lite with the Chicago Bears and the Green Bay Packers in this study, we can also safely assume that this brand enjoys favorable images in both markets as it is the market leader in several Midwest markets and it is based in Milwaukee, Wisconsin. The fit between the sponsored teams and the brand is high given that beer consumption is commonly associated with sports events and with American football in particular.

Consumers are also familiar with beer sponsorships in this sports industry as beer manufacturers are avid sponsors of the game. In the case of NFL's beer sponsorship deals, therefore, the formation of a relationship between the brand and the sponsored team are likely to result in favorable attitude changes and higher sales through associative learning processes.

### 4.3.3 Transferring effects

Another research stream emphasizes the role of image, meaning, and attitude transfers in the effectiveness of marketing communications and advertising. One common application of this framework is the response model to celebrity endorsement deals through the image and meaning transfer from celebrities to endorsed brands (McCracken, 1989). In a sponsorship context, the consumer response can be explained through an image transfer at the perception level (Gwinner & Eaton, 1999), a meaning transfer at the cognitive level (Gwinner, 1997), and an attitude transfer at the attitudinal level (Crimmins & Horn, 1996). According to this framework, a team's image, meaning, or the attitudes towards that team can become associated with the brand's image, the meaning, or the attitudes towards that brand.

We can expect a transfer of positive effects from the sponsored team to the brand as the team enjoys consumer liking in home markets, has a favorable image and meaning, and as consumers generally have favorable attitudes towards that team. We expect this effect to increase with team success as it is a very important driver of customer-based brand equity for sports teams (Gladden & Funk, 2002).

*4.3.4 Sponsorship and sales promotions*

Taken together the three perspectives we have discussed imply that a sponsorship deal can result in increased awareness, consideration, preference, and attitude. In that regard, two opposing mechanisms may intervene between sponsorship and sales promotion effectiveness. On the one hand, sponsorships and sales promotions can have complimentary functions within the integrated marketing communications program of a company. Sponsorships are particularly effective in the earlier stages of the purchase funnel. Sales promotions are mostly incentive-based and especially effective in the later stages of the purchase funnel. They are commonly used to encourage trial and repeat usage, attract brand switchers and price sensitive-buyers (Huff & Alden, 2000). As sponsorships increase awareness and consideration, consumers also become more attentive and responsive to the sales promotions of the sponsored brand. On the other hand, sponsorships may increase product differentiation and the strength of brand preference, which will lead to a decrease in price sensitivity. It may make consumers less sensitive to price-oriented sales promotions. Therefore, we believe sponsorships are likely to interact with price-oriented sales promotions and non-price-oriented sales promotions differently. Sponsorships should increase the response to non-price-oriented sales promotions. The effects of sponsorships on consumer's responses to price-oriented sales promotions, however, is contingent on which of these opposing mechanisms predominates. Mela, et al. (1997) addressed a similar problem in their examination of the long-term effects of promotion and advertising on brand choice behavior. They found that advertising increases consumers' sensitivity to non-price-oriented sales promotions in the non-loyal segment but has no significant effect on their sensitivity to price-oriented promotions.

## 4.4   Data and Descriptives

*4.4.1 Store level brand sales and sales promotion data*

The data used in this study is acquired from Information Resources, Inc. (see Bronnenberg et al., 2008). The data include weekly beer sales of brands sold in 45 stores in 4 US states from January 1st 2001 to December 31st 2006. Two of these states are Illinois and Wisconsin where Miller Lite gained the exclusive rights to use logos and trademarks of the sports franchises and engage in promotional activities due to sponsorship deals with the Chicago Bears and the Green Bay Packers in 2002. The other two states are Ohio and Missouri, which are in close geographical proximity to each other and to Illinois and Wisconsin. Ohio and Missouri each host their own NFL franchises which compete with the Bears and the Packers in the NFL. Data from these two states are combined into a single market named 'unsponsored markets'. In total there were 881 different beer brands sold in these markets during this time period. However, many of these brands are local, available in only a few stores, or seasonal and available for only a limited period of time. Therefore, many of the brands have a very small market share. We combined brands with a market share smaller than 3% in each state into one group and named it 'small brands'. The sponsored brand and the competing brands with a market share larger than 3% together account for 60.1% of the total volume sales in selected markets.

The data set also covers weekly price oriented (price reductions) and non-price oriented (feature and display) promotions for all brands. The data on price oriented sales promotions indicate whether there was a price reduction equal or greater than 5%. We combined feature and display promotions into a compound variable named 'non-price

oriented sales promotion'. The data on non-price oriented sales promotions indicate whether there was a display and/or feature without a price discount.

**Table 14: Descriptive statistics - Average weekly sales and promotion frequencies before and after the sponsorship**

| Variable | Brand | Sponsored Markets | | Non-sponsored Markets | |
|---|---|---|---|---|---|
| | | Before Sponsorship | After Sponsorship | Before Sponsorship | After Sponsorship |
| Sales (x7200 ounces) | Sponsored Brand | 1.156 | 1.264 | 0.664 | 0.744 |
| | Sibling Brands | 0.533 | 0.476 | 0.307 | 0.250 |
| | Competitors (Large) | 0.451 | 0.441 | 0.773 | 0.672 |
| | Competitors (Small) | 0.033 | 0.032 | 0.036 | 0.033 |
| Price Promotion Frequency[a] | Sponsored Brand | 0.609 | 0.634 | 0.951 | 0.924 |
| | Sibling Brands | 0.488 | 0.530 | 0.663 | 0.784 |
| | Competitors (Large) | 0.457 | 0.462 | 0.728 | 0.720 |
| | Competitors (Small) | 0.195 | 0.179 | 0.268 | 0.319 |
| Non-Price Promotion Frequency[a] | Sponsored Brand | 0.305 | 0.306 | 0.027 | 0.058 |
| | Sibling Brands | 0.299 | 0.291 | 0.135 | 0.103 |
| | Competitors (Large) | 0.237 | 0.237 | 0.116 | 0.122 |
| | Competitors (Small) | 0.063 | 0.075 | 0.061 | 0.068 |

[a]: Ratio of weeks in which the brand engages in sales promotion activities as a fraction of 1.

In Table 14, we show the average weekly sales and sales promotion frequencies of the sponsored brand (Miller Lite), sibling brands which are marketed under the same parent brand (other Miller brands such as Miller High Life or Miller Genuine Draft), large competing brands (with market share equal or larger than 3%) and small competing brands (with market share smaller than 3%).

According to the figures, the sponsored brand has higher average weekly sales after the sponsorship in both the sponsored markets and non-sponsored markets. This difference should not be directly attributed to sponsorship as a variety of factors may

influence the sales. The sponsored brand also seems to increase the frequency of price promotions over the years in sponsored markets while increasing the frequency of non-price promotions in non-sponsored markets. Sibling brands and competing brands have lower average weekly sales volumes during the post-sponsorship period but again the difference is not necessarily due to the sponsorship.

*4.4.2 Team performance*

To study the effect of team performance on sales responses to sponsorships, we collect data on how the performance of sponsored teams changed over the course of the sponsorships. We use ESPN weekly power rankings to operationalize team performance. Team rankings are a measure of how the team performed lately. The rankings are determined by a poll of ESPN.com's senior writers.

Figure 2 shows how team performances change over time. From the figure, it is clear that there is a great variation in the success of NFL franchises over time. Both teams were ranked as the top and bottom teams during a 5-year period. For example, the Chicago Bears earned a trip to the Super Bowl in 2006 only two years after being ranked as the least successful team in the NFL.

**Figure 2: Team performances during 2002-2006 seasons**
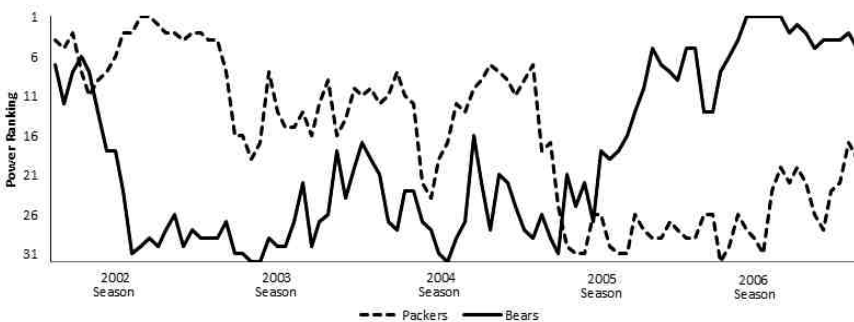
## 4.5   Model

To investigate the effects of sponsorship deals on the sales performance of the partnering and of competing brands, we specify a dynamic linear brand sales model at the store level (see Ataman et al., 2008; van Heerde et al., 2004 for DLM applications in marketing; and West & Harrison, 1997 for an extensive overview of DLM models in general). DLM models capture gradual adjustment patterns (e.g., the effect of sponsorship on baseline sales and sales promotion effectiveness), neatly incorporate multiple time-varying parameters and effectively assess how market response parameters vary over time (e.g., the effect of sales promotions), and retain the hierarchical nature of the data (e.g., differences in sales response to sponsorship across brands and markets).

The model includes three types of equations: the observation equation, state equations, and equations, which accommodate heterogeneity in responses across brands.

### 4.5.1 The observation equation

The model includes an observation equation for the observed series, which are the weekly brand sales at the store level. The observation equation distinguishes the baseline sales of the brand and the short-term fluctuations due to promotional activities and/or seasonality:

$$Sales_{ist} = \alpha_{ist} + \beta 1_{ist} X1'_{ist} + \beta 2_{is} X2'_{ist} + v_{ist} \qquad (12)$$

$Sales_{ist}$ is the sales of brand $i$ in store $s$ in week $t$. The sales are standardized to remove variation across stores. The regressor matrix $X1_{ist}$ includes variables for observed price oriented sales promotions and non-price oriented sales promotions, which generate short term fluctuations around the baseline sales $\alpha_{ist}$. The regressor matrix $X2_{ist}$ includes control variables for seasonality, public holidays, and missing data. We test for seasonal patterns by

applying sine and cosine functions ($\sin\frac{2\pi t}{T}$ and $\cos\frac{2\pi t}{T}$). We also include dummy variables for Memorial Day, Independence Day, Labor Day, and New Year's to control for the effects of public holidays on beer sales. If the holiday falls on a Monday, we include the week prior and the week of to capture the effect. To control for the effect of missing data (if any), we also add a pulse dummy. It takes the value of 1 when no data comes from the store at a particular week.

To be estimated, parameters include the baseline sales $\alpha_{ist}$, the response to sales promotion activities $\beta1_{ist}$, and the effect of control variables $\beta2_{is}$. The time varying coefficients ($\alpha_{ist}$ and $\beta1_{ist}$) allow for the gradual adjustment of baseline sales and sales promotion effects to their new levels after the sponsorship. We assume the disturbance term to be normally distributed and independent across brands, stores, and time ($\nu_{ist}\sim N(0,V_{is})$).

*4.5.2 State equations*

In addition to the observation equation, the model specification consists of three state equations: the baseline sales evolution equation and two promotion response equations. The baseline sales equation explains the effect of sponsorship on baseline sales:

$$\alpha_{ist} = \mu_{is} + \sigma_{is}\alpha_{ist-1} + \gamma_{is}(Sponsor_t * Z_{ist}) + \omega1_{ist} \qquad (13)$$

where $\alpha_{ist-1}$ is the lagged baseline sales. The effect of the sponsorship on baseline sales is modeled using an interaction term. The vector $Sponsor_t$ includes a step function- a dummy variable, which takes the value of 1 after the sponsorship deal. The regressor matrix $Z_{ist}$ includes a constant (for capturing the effect of the sponsorship that is not contingent on team related factors) and a team performance variable. The team ranking on the weekly power rankings is transformed into a variable with a range between -1 and 1 using the

following formula: (33-2*Team Ranking)/31. For a team that ranks first among 32 teams in the power rankings, the team performance is 1. For the lowest ranked team, the team performance is -1.

To be estimated, parameters include the base sales $\mu_{is}$ and the carry-over coefficient $\sigma_{is}$ which captures the speed of adjustment (i.e., when $\sigma_{is} = 0$, a sponsorship's effects occur immediately, as $\sigma_{is}$ approaches to 1, the effects evolve more gradually), $\gamma_{is}$ which captures the effects of sponsorship on baseline sales. We assume the disturbance term to be normally distributed and independent across brands, stores, and time ($w1_{ist} \sim N(0, W1_{is})$).

The promotion response equations explain how the effect of sales promotion activities of the focal brand on sales evolves over time under the influence of the sponsorship deal. There are two promotional mix equations, one for the effect of price oriented promotions ($\beta1_{ist_{pp}}$) and the other one for the effect of non-price oriented promotions ($\beta1_{ist_{npp}}$).

$$\begin{bmatrix} \beta1_{ist_{pp}} \\ \beta1_{ist_{npp}} \end{bmatrix} = \begin{bmatrix} \lambda_{is_{pp}} \\ \lambda_{is_{npp}} \end{bmatrix} + \begin{bmatrix} \varphi_{is_{pp}} & 0 \\ 0 & \varphi_{is_{npp}} \end{bmatrix} \begin{bmatrix} \beta1_{ist-1_{pp}} \\ \beta1_{ist-1_{npp}} \end{bmatrix} + \begin{bmatrix} \psi_{is_{pp}} \\ \psi_{is_{npp}} \end{bmatrix} (Sponsor_t * Z_{ist}) + \begin{bmatrix} w2_{t_{pp}} \\ w2_{t_{npp}} \end{bmatrix} \quad (14)$$

$\beta1_{ist-1}$ is the lagged effect of promotional activities. To be estimated, parameters include the intercept $\lambda_{is}$, $\psi_{is}$ which captures how the effect of marketing activities on sales changes due to the sponsorship, and the adjustment rate $\varphi_{is}$. The adjustment rate captures the speed of adjustment to a new equilibrium. When $\varphi_{is} = 0$, a sponsorship's effect on promotion response occurs immediately. As $\varphi_{is}$ approaches to 1, the promotion response adjusts to its new level in a more gradual manner. We assume the disturbance term to be normally distributed and independent across brands, stores, and time ($w2_{ist} \sim N(0, W2_{is})$).

In sum, the baseline sales equation asserts that the sponsorship deal has an effect on baseline sales and this effect may adjust gradually over time. The effect of the sponsorship may further change over time due to changes in team performance. The promotional response equations assert that the sponsorship deal and the subsequent team performance may also have an effect on sales through influencing the response to promotional activities. The specification ensures that the effect of sponsorships on sales promotion responses may also adjust gradually over time.

### 4.5.3 Heterogeneity in response to sponsorship

To be estimated parameters of Equation 12, 13, and 14 are store and brand specific. We accommodate the heterogeneity in responses to sponsorships across stores and brands through two sets of equations. The first set of equations shrinks non-sponsorship parameters to a common mean ($\delta$) and allows for variation around this mean. Non-sponsorship parameters include the parameters, which capture the effects of control variables $\beta 2_{is}$ and the base levels in state equations ($\mu_{is}$, $\lambda_{is}$).

$$\begin{bmatrix} \beta 2_{is} \\ \mu_{is} \\ \lambda_{is} \end{bmatrix} = \begin{bmatrix} \delta_{\beta 2} \\ \delta_{\mu} \\ \delta_{\lambda} \end{bmatrix} + \begin{bmatrix} u_{\beta 2} \\ u_{\mu} \\ u_{\lambda} \end{bmatrix} \quad (15)$$

The second set of equations explains how response to sponsorships, the effects of sponsorships on baseline sales ($\gamma_{is}$), the effects of sponsorships on promotion responses ($\psi_{is}$), and adjustment rates ($\sigma_{is}$ and $\varphi_{is}$) differ across brands (sponsored brand, sibling brands, competing brands) and stores (stores in sponsored and non-sponsored markets):

$$
\begin{bmatrix} \gamma_{is} \\ \psi_{is} \\ \sigma_{is} \\ \varphi_{is} \end{bmatrix} = \begin{bmatrix} \eta_{0_\gamma} \\ \eta_{0_\psi} \\ \eta_{0_\sigma} \\ \eta_{0_\varphi} \end{bmatrix} + \begin{bmatrix} \eta_{1_\gamma} \\ \eta_{1_\psi} \\ \eta_{1_\sigma} \\ \eta_{1_\varphi} \end{bmatrix} SB_i + \begin{bmatrix} \eta_{2_\gamma} \\ \eta_{2_\psi} \\ \eta_{2_\sigma} \\ \eta_{2_\varphi} \end{bmatrix} LB_i + \begin{bmatrix} \eta_{3_\gamma} \\ \eta_{3_\psi} \\ \eta_{3_\sigma} \\ \eta_{3_\varphi} \end{bmatrix} SM_s
$$

$$
+ \begin{bmatrix} \eta_{4_\gamma} \\ \eta_{4_\psi} \\ \eta_{4_\sigma} \\ \eta_{4_\varphi} \end{bmatrix} (SB_s * SM_i) + \begin{bmatrix} \eta_{5_\gamma} \\ \eta_{5_\psi} \\ \eta_{5_\sigma} \\ \eta_{5_\varphi} \end{bmatrix} (LB_i * SM_s) + \begin{bmatrix} \varepsilon_\gamma \\ \varepsilon_\psi \\ \varepsilon_\sigma \\ \varepsilon_\varphi \end{bmatrix} \qquad (16)
$$

where $SB_i$ and $LB_i$ are dummy variables, which respectively indicate whether the focal brand is a sponsored brand or a sibling brand. $SM_s$ is the dummy variable, which takes the value of 1 if the store s is in the sponsored market. To be estimated, parameters include the intercept, the coefficients of three dummy variables and the interaction terms. The parameters of the interaction terms ($SB_s*SM_i$) and ($LB_i*SM_s$) are of central importance to test for the effects of sponsorship on sponsored brands and sibling brands' sales performance. We assume all disturbance terms to be normally distributed ($\varepsilon \sim N(0, \Sigma)$).

*4.5.4 Estimation procedure*

We estimate the equation parameters using the Gibbs sampling procedure. We apply the forward-filtering, backward-sampling algorithm (see Carter & Kohn, 1994; Frühwirth-Schnatter, 1994) to obtain the estimates of the time varying parameters, namely the baseline sales, the effect of sponsorship, and the effect of marketing activities. Assuming a diagonal error covariance matrix for both observation and state equations, we place an inverse Gamma prior on the diagonal elements of matrices. We place multivariate normal priors on the other parameters.

## 4.6   Estimation Results

We estimate the DLM model running the sample chain for 55,000 iterations using a Gibbs sampler (25000 for burn-in and 30000 for sampling). We estimate the parameters for

the sponsored brand, the sibling brands, and each of the competing brands with a market share larger than 3%. We estimate three sets of non-time varying parameters: (1) non-sponsorship parameters, which capture the effect of control variables and base levels in state equations; (2) sponsorship parameters, which capture the effect of sponsorship on state variables; and (3) autoregressive parameters, which capture the amount of carryover effects.

### 4.6.1 Estimates of non-sponsorship parameters

In the observation equation (Equation 12) we estimate the control variable parameters such as seasonality parameters and the time-varying parameters. For each time varying parameter we specify a state equation (Equation 13 and 14). There are three state equations in our model: the baseline sales equation and two promotion response equations. Each state equation includes a constant variable. The parameter for the constant in baseline sales equation captures the base sales (i.e., the long run equilibrium sales before the sponsorship). The parameters for constants in the promotion response equations indicate the base level of additional sales during promotion weeks. We shrink each of the non-sponsorship parameter in the observation equation and state equations to a common mean (Equation 15). Table 15 shows the median of the hierarchical means, the median of the estimated hierarchical variances, and 95% credible intervals for non-sponsorship parameters.

Table 15 indicates that the 95% confidence interval excludes zero for all seasonality variables. According to the results, the sales exhibit a seasonal pattern increasing during summer months and reaching a peak at 30th week in a 52 week year (around late July). Sales also increase during public holidays. Independence Day, July 4th, seems to be the biggest

beer-selling holiday of the year. The results also imply that brands gain additional sales during promotional weeks as the estimates for the constant terms in price promotion and non-price promotion response equations are positive and their 95% confidence intervals exclude zero as expected.

**Table 15: Estimates of the non-sponsorship parameters in observation and state equations**

| Equation | Coefficient | Median (means - δ) | [2.5th & 97.5th percentile] | Median (variances-u) |
|---|---|---|---|---|
| Observation | Seasonality Sine Function | -0.039 | [-0.041; -0.036] | 0.001 |
| | Seasonality Cosine Function | -0.085 | [-0.090; -0.082] | 0.005 |
| | Memorial Day | 0.096 | [0.091; 0.102] | 0.009 |
| | Independence Day | 0.284 | [0.277; 0.294] | 0.101 |
| | Labor Day | 0.071 | [0.065; 0.077] | 0.004 |
| | New Year's | 0.208 | [0.201; 0.214] | 0.055 |
| | Missing Store Data | -0.498 | [-0.525; -0.469] | 0.128 |
| Baseline Sales | Constant | 0.165 | [0.158; 0.175] | 0.029 |
| Price Promotion Response | Constant | 0.079 | [0.072; 0.086] | 0.007 |
| Non-Price Promotion Response | Constant | 0.032 | [0.026; 0.036] | 0.002 |

The analysis of individual brand level coefficients provides similar results. A majority of brands, 58% on Memorial Day, 81% on Independence Day, 49% on Labor Day, and 75% on New Year's, experience significantly higher sales on public holidays. No brands experience significantly lower sales on public holidays. 99% of brands have a positive median parameter estimate of price promotions and the posterior interval excludes zero for 74% of brands. 97% of brands have a positive median parameter estimate of non-price promotions and the posterior interval excludes zero for 50%. No brands experience significantly negative immediate effects of price promotions or non-price promotions.

*4.6.2 Estimates of sponsorship parameters*

Table 16 displays the estimates for the parameters which capture the effects of sponsorships on baseline sales. The regressor matrix $Z_{ist}$ in Equation 13 includes a constant and a team performance variable. The estimates for the constant covariate explain the baseline sales response to a sponsorship deal and the estimates for the team performance covariate explain how subsequent team performance over the course of the sponsorship influences baseline sales.

**Table 16: Estimates of the sponsorship parameters in baseline sales equation**

|  | Median | [2.5th and 97.5th percentile] |
|---|---|---|
| Covariate: Constant |  |  |
| Constant | 0.003 | [-0.004; 0.006] |
| Sponsored Brand | 0.012 | [-0.004; 0.024] |
| Sibling Brand | -0.006 | [-0.010; -0.002] |
| Sponsored Market | -0.007 | [-0.010; -0.003] |
| Sponsored Brand x Sponsored Market | 0.034 | [0.026; 0.046] |
| Sibling Brand x Sponsored Market | -0.006 | [-0.011; 0.001] |
| Covariate: Team Performance |  |  |
| Constant | 0.008 | [0.005; 0.013] |
| Sponsored Brand | 0.017 | [0.008; 0.029] |
| Sibling Brand | -0.005 | [-0.009; 0.001] |
| Sponsored Market | -0.002 | [-0.006; 0.001] |
| Sponsored Brand x Sponsored Market | 0.025 | [0.010; 0.049] |
| Sibling Brand x Sponsored Market | 0.008 | [-0.001; 0.014] |

The median values of the hierarchical variances are $9 \times 10^{-4}$ (constant) and $6 \times 10^{-4}$ (team performance).

The results imply that the sponsored brand experiences an increase in baseline sales at stores in sponsored markets after the sponsorship. Team performance also has a positive effect on baseline sales. The 95% confidence intervals for the estimates of the interaction term (Sponsored Brand x Sponsored Market) for both covariates exclude zero.

Brands at stores in sponsored markets experience a loss in baselines sales after sponsorship. The 95% confidence interval for the Sponsored Market estimates excludes zero. The negative response of sibling brands' baseline sales to the sponsorship at stores in sponsored markets is almost marginally significant. The confidence interval for the estimates of the interaction term (Sibling Brand x Sponsored Market) crosses zero at about 7%.

Together, the results in Table 16 imply that a sponsorship has a positive effect on the baseline sales of the sponsored brand at stores in sponsored markets. Furthermore, the effect on baseline sales increases with team performance. Results also show that brands at stores in sponsored markets experience a loss in their baseline sales after sponsorship. This finding may indicate that the positive sales response of the sponsoring brand is not entirely due to the expansion of primary demand. A sponsorship also generates brand switching from competitors.

Table 17 shows the estimates for the sponsorship parameters in the promotion response equations. The sponsored brand at stores in sponsored markets enjoys an increase in the effectiveness of non-price promotions. The effect of sponsorships on price promotion effectiveness can also be considered positive as the confidence interval crosses zero at about 6%. This effect on price promotion response is further contingent on team performance. While team performance increases the response to price promotions, it has no significant effect on non-price promotion response.

Brands at stores in sponsored markets also realize a gain in price promotion effectiveness after the sponsorship but the effect on non-price promotion effectiveness is not significant. There is no significant effect of team performance on promotion response for these brands.

**Table 17: Estimates of sponsorship parameters in promotion response equations**

| | Effect on | | | |
| --- | --- | --- | --- | --- |
| | Price Promotion Response | | Non-Price Promotion Response | |
| | Median | [2.5th and 97.5th percentile] | Median | [2.5th and 97.5th percentile] |
| Covariate: Constant | | | | |
| Constant | -0.010 | [-0.015; -0.005] | 0.001 | [-0.003; 0.005] |
| Sponsored Brand | 0.019 | [0.004; 0.034] | 0.004 | [-0.015; 0.020] |
| Sibling Brand | 0.003 | [-0.003; 0.009] | -0.001 | [-0.003; 0.002] |
| Sponsored Market | 0.010 | [0.004; 0.017] | 0.003 | [-0.001; 0.008] |
| Sponsored Brand x Sponsored Market | 0.016 | [-0.002; 0.032] | 0.005 | [0.001; 0.024] |
| Sibling Brand x Sponsored Market | -0.005 | [-0.012; 0.004] | 0.001 | [-0.003; 0.003] |
| Covariate: Team Performance | | | | |
| Constant | -0.001 | [-0.009; 0.005] | 0.002 | [-0.002; 0.008] |
| Sponsored Brand | -0.003 | [-0.017; 0.012] | -0.008 | [-0.033; 0.023] |
| Sibling Brand | -0.001 | [-0.002; 0.002] | -0.001 | [-0.002; 0.002] |
| Sponsored Market | 0.006 | [-0.002; 0.014] | 0.002 | [-0.004; 0.009] |
| Sponsored Brand x Sponsored Market | 0.036 | [0.015; 0.118] | 0.014 | [-0.043; 0.071] |
| Sibling Brand x Sponsored Market | 0.001 | [-0.002; 0.004] | 0.001 | [-0.003; 0.003] |

The median values of the hierarchical variances are $4 \times 10^{-4}$ (constant) and $3 \times 10^{-4}$ (team performance) in the price promotion response equation. The median values of the hierarchical variances are $1 \times 10^{-4}$ (constant) and $1 \times 10^{-4}$ (team performance) in the price promotion response equation.

*4.6.3 Estimates of autoregressive parameters*

Our model includes three state equations and each state equation includes an autoregressive parameter which represents the amount of carry-over effects (or the speed of adjustment into a new equilibrium after the sponsorship). Table 18 displays the parameter estimates for autoregressive parameters.

To better interpret the results for the autoregressive parameters, we compute 90% duration intervals for the sponsored brands, sibling brands, and competing brands in the sponsored market using the median values of autoregressive parameters. The 90% duration intervals, reported in Table 19, indicate the time needed to realize the 90% of the long term effect of the sponsorship.

**Table 18: Estimates of autoregressive parameters**

| Equation | | Median | [2.5th and 97.5th percentile] |
|---|---|---|---|
| Baseline Sales | Constant | 0.626 | [0.610; 0.644] |
| | Sponsored Brand | 0.109 | [0.051; 0.120] |
| | Sibling Brand | -0.057 | [-0.071; -0.036] |
| | Sponsored Market | 0.009 | [0.002; 0.014] |
| | Sponsored Brand x Sponsored Market | -0.196 | [-0.210; -0.146] |
| | Sibling Brand x Sponsored Market | 0.110 | [0.082;0.129] |
| Price Promotion Response | Constant | 0.212 | [0.185; 0.243] |
| | Sponsored Brand | -0.017 | [-0.146; 0.078] |
| | Sibling Brand | -0.097 | [-0.189; 0.029] |
| | Sponsored Market | -0.028 | [-0.063; 0.009] |
| | Sponsored Brand x Sponsored Market | -0.105 | [-0.210; 0.024] |
| | Sibling Brand x Sponsored Market | 0.089 | [-0.034; 0.185] |
| Non-Price Promotion Response | Constant | 0.169 | [0.119; 0.215] |
| | Sponsored Brand | -0.008 | [-0.144; 0.175] |
| | Sibling Brand | 0.020 | [-0.079; 0.126] |
| | Sponsored Market | -0.040 | [-0.082; 0.008] |
| | Sponsored Brand x Sponsored Market | -0.105 | [-0.303; 0.047] |
| | Sibling Brand x Sponsored Market | -0.034 | [-0.129;0.052] |

**Table 19: The number of weeks needed to realize the 90% of the long-term effect**

| | Equation | | |
|---|---|---|---|
| | Baseline Sales | Price Promotion Response | Non-Price Promotion Response |
| Sponsored Brands | 4 | 1 | 1 |
| Sibling Brands | 7 | 2 | 2 |
| Competing Brands | 6 | 2 | 2 |

Sponsored brands realize the 90% of the long-term effects of sponsorship in only 4 weeks. The effect of sponsorship on promotion response parameters materializes almost instantaneously. The system parameters for sibling brands and competing brands adjust in a relatively gradual manner. The 90% of the long-term effects of sponsorship on baseline sales are realized after 7 weeks for sibling brands and 6 weeks for competing brands. The

90% of the long-term effects on sales promotion responses adjust in 2 weeks for both sibling and competing brands.

### 4.6.4 *Estimates of error terms*

We estimate the variances of the error terms for each brand. Table 20 presents the median, minimum, and maximum values for the estimated hierarchical variances. The variances of the error term in the observation equation range between 0.0006 (25th percentile) and 0.0164 (75th percentile), with a median of 0.0056. The average variance of the observation equation is 0.0225 and it is considerably less than the average variance of brands' weekly sales, which is 0.0823. The variances of the error term in the baseline sales equation range between 0.0003 (25th percentile) and 0.0032 (75th percentile), with a median of 0.0012. The median W/V ratio is 0.404.

**Table 20: Estimated variances of error terms**

| Error Term | Mean | Median | Min & Max |
|---|---|---|---|
| V | 0.0225 | 0.0056 | [0.0000; 0.5913] |
| W1 | 0.0031 | 0.0012 | [0.0000; 0.0410] |
| $W2_{pp}$ | 0.0065 | 0.0005 | [0.0001; 0.2105] |
| $W2_{npp}$ | 0.0014 | 0.0002 | [0.0001; 0.0727] |

### 4.6.5 *The effect of sponsorship on baseline sales*

The results presented in previous subsections describe the heterogeneity in responses to sponsorships across brands and stores. To better understand the effect of sponsorships on sales, we depict the evolution of baseline sales using the values of estimated parameters in the baseline sales equation. In Figure 3, we graphically show how baseline sales of the sponsored brand at a store in a sponsored market evolve over time under the influence of a

sponsorship deal, which starts at Week 5. We refrain from using a time-varying team performance variable to better visualize its effect on baseline sales. We instead draw three different curves in each graph to compare the response to sponsorship for three different levels of team performance: high (team performance variable is set to 0.5), mediocre (team performance variable is set to 0), and low (team performance variable is set to -0.5). We use median values of the parameter estimates for the base sales, adjustment rates, and effects of sponsorship on baseline sales to calculate each curve.

The graph shows that baseline sales increase after the sponsorship. The gain is bigger when the brand sponsors a team with higher performance. For instance, the gain in the baseline sales after a sponsorship with a high performing team corresponds to a 14.4% increase in baseline sales.

**Figure 3: Baseline sales response to a sponsorship for sponsored brands**
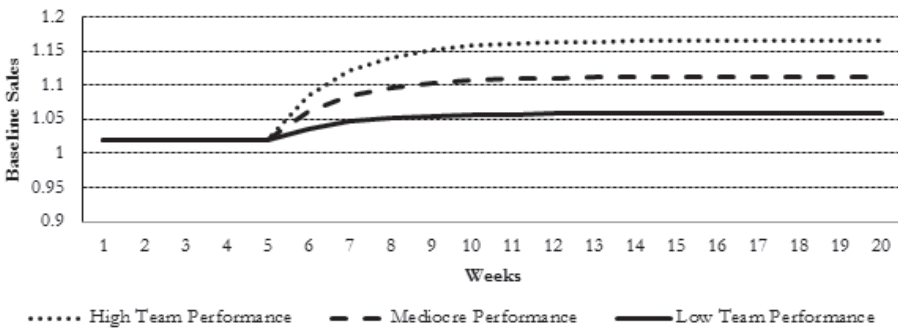
**Figure 4: Baseline sales response to a sponsorship for non-sponsored brands**
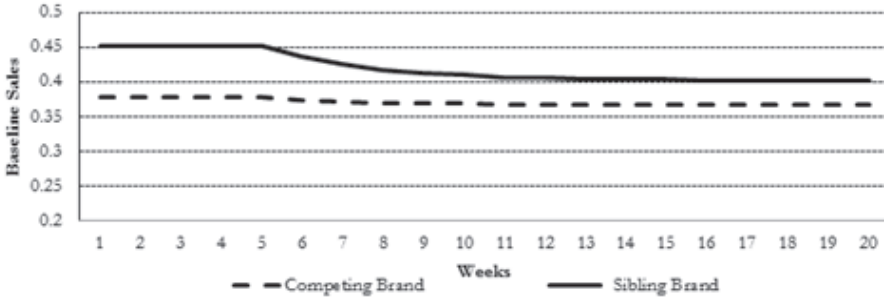


Figure 4 displays the baseline sales response to a sponsorship for two different types of brands: a sibling brand and a competing brand. We refrain from depicting different curves for different levels of team performance to avoid clutter as team performance has no significant effect on the baseline sales of these brands. Both types of brands experience a loss in their baseline sales after the sponsorship and the effects evolve gradually. The loss corresponds to a 10.9% decrease in baseline sales for sibling brands and a 2.8% decrease for competing brands. Figure 3 and 4 together indicate that the sponsored brand enjoys an increase in baseline sales after sponsorship and this gain is partly due to brand switching. However, the sponsoring firm's other brands which are linked to the sponsored brand are the ones which experience a relatively bigger loss in their baseline sales.

We compute the long-run effect of sponsorship and team performance on baseline sales for each brand with $\gamma_{is}/(1 - \sigma_{is})$. The long-run effect ranges between 0.062 (25th percentile) and 0.210 (75th percentile) with a median of 0.116 for sponsoring a mediocre performance team. The long-run effect of sponsorship on baseline sales is negative for the majority of competing and sibling brands in the sponsored markets. For competing brands the effect ranges between -0.033 (25th percentile) and -0.002 (75th percentile) with a median

of -0.014. For sibling brands, the effect ranges between -0.124 (25th percentile) and -0.053 (75th percentile) with a median of -0.071.

*4.6.6 The effect of sponsorship on promotion response*

The estimates for the sponsorship parameters of the promotional response equations reveal that the sponsored brand at a store in a sponsored market realizes an increase in the effectiveness of price-oriented and non-price-oriented sales promotions. The effect on price promotion effectiveness further increases with team performance. In Figure 5, we graphically show the evolution of price promotion effectiveness of the sponsored brand at a store in a sponsored market. The price promotion response evolves under the influence of a sponsorship deal which starts at Week 5. Similarly, we depict the evolution of non-price promotion response in Figure 6. Both graphs show that the sponsored brand at a store in sponsored markets realizes a gain in sales promotion effectiveness after the sponsorship started.

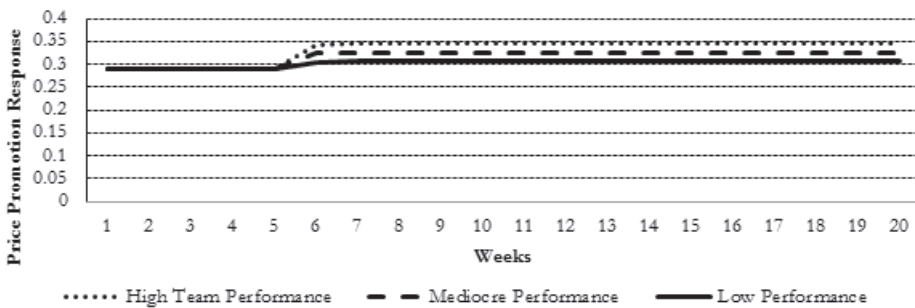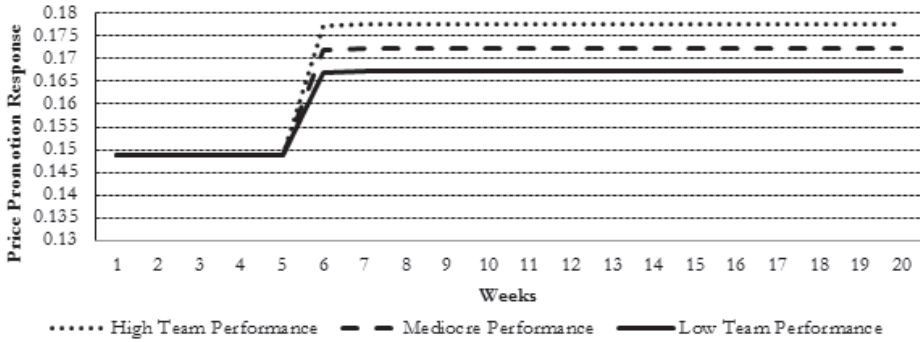**Figure 5: Price promotion response to a sponsorship for sponsored brands**

**Figure 6: Non-price promotion response to a sponsorship for sponsored brands**



We compute the long-run effect of sponsorship on promotion effectiveness for each brand with $\tau_{is_{pp}}/(1-\varphi_{is_{pp}})$ and $\tau_{is_{npp}}/(1-\varphi_{is_{npp}})$. The effect on price promotion effectiveness ranges between 0.008 (25th percentile) and 0.045 (75th percentile) with a median of 0.029 for sponsoring a mediocre performance team. The long-run effect on non-price promotion effectiveness ranges between -0.006 (25th percentile) and 0.049 (75th percentile) with a median of 0.017.

## 4.7 Discussion

Sponsorship deals with major sports franchises require substantial amounts of financial investments. Previous research has shown that sponsorship deals increase consumer awareness, brand identification, and brand recall; yet there is uncertainty regarding whether the investments also leads to returns in terms of additional sales. Our findings show that sponsorship deals do result in additional sales for the sponsoring brand in two different ways.

First, there is a direct effect of sponsorship deals on the baseline sales of the sponsoring brand in the sponsored market. This finding is in line with our expectation as

we expected a transfer of positive effects from the sponsored team to the sponsoring brand as the team enjoys consumer liking in their home markets, has a favorable image and meaning, and consumers have favorable attitudes towards that team. Results further indicate that the effect increases with team performance. This finding is also in line with our expectations as stronger team performance drives customer-based brand equity for the team and allows for a transfer of an increased positive effect.

Second, we find that a sponsoring brand experiences an increased effectiveness of its sales promotion instruments. This might be due to complimentary functions of sales promotions and sponsorship deals within the integrated marketing communications program of a company. A sponsorship deal might influence the earlier stages of the consumer decision process either by increasing the brand awareness, leading the brand to enter the consideration set of consumers, or increasing consumers' liking for the brand. The reaction to sales promotions, therefore, might increase as consumers become more attentive and responsive to the sales promotions of the sponsored brand.

In sum, our results reveal that sponsorship deals lead to higher sales of the sponsored brand. Our results provide insights on how to further increase the economic worth of sponsorship deals. First, we find that the effect of sponsorship on sales increases with higher team performance. Therefore, according to our results, the sponsorship decision should also be based on the (potential) team performance on the field.

Second, firms should give consideration to how a sponsorship might influence the performance of other brands in their brand portfolio. We show how other brands in the market are affected by a sponsorship. These results imply that sponsorships generate sales due to brand switching from competitors. Brands which are linked to the sponsoring brand seem to experience relatively bigger sales losses after sponsorship. Managers of other

competing brands should also evaluate the effects of sponsorship as the sponsorship has a negative effect on the baseline sales performance of competing brands.

Third, managers should consider possible interactions with other promotional mix elements when they engage in sponsorship deals. Our results indicate that sponsorship increases the effectiveness of sales promotions. Considering synergies between different promotional mix elements would lead to a more effective allocation of a promotion budget across different promotional mix elements.

Our study is not without limitations. First, we focus exclusively on the effects of sponsorship deals on the sales performance of beer brands. The consumers' response process to sponsorship activity might be different for product categories where the perceived product differentiation among leading brands is relatively larger. Further research should therefore analyze the effects of sponsorship deals in other product categories. Other active sports sponsors include quick service restaurants, branded food and beverage manufacturers, insurance firms, airlines, mobile service carriers, and cars. Second, we examine two sponsorship deals between one brand and two sports franchises. The effect of sponsorship might be contingent on (i) some team-specific factors such as the size of the team's fan base, the overall image of the team, the strength of the bond between the team and its fans; (ii) some brand specific factors such as brand awareness and brand equity; and (iii) the fit between the brand and the team. Therefore, further research should address the effects of sponsorships cross-sectionally for different brands and different teams. Third, we evaluated the effectiveness of sponsorship deals with NFL teams. NFL is the most lucrative professional sports league in the world and fans are more likely to recognize the sponsors of the NFL than the sponsors of other professional sports leagues. Further research should investigate the effectiveness of sponsorship deals with franchises in other

leagues such as MLB, NBA, NHL, PGA Tour, and NASCAR. Fourth, we only focused on exclusive sponsorship deal in our study. Further research should investigate how sponsorship works when two or more competing brands become sponsor of the same team. In light of our findings and limitations, we hope our study will encourage further research on sponsorship effects towards a more comprehensive understanding of this increasingly preferred and economically highly relevant form of marketing communication.

## APPENDIX

### Model Estimation

The observation equation (Equation 12) and the evolution equations (Equation 13-15) can be written for each brand i, each store s, and each time t as follows:

$$Y_{ist} = F'_{ist}\theta_{ist} + X_{ist}\beta_{is} + v_{ist},$$

$$\theta_{ist} = G_{is}\theta_{ist-1} + h_{ist} + w_{ist},$$

$$v_{ist} \sim N[0, V_{is}], \quad w_{ist} = (w1_{ist}, w2_{ist}) \sim N[0, W_{is}],$$

$$\begin{pmatrix} \alpha_{is0} \\ \beta1_{is0} \end{pmatrix} D_{is0} \sim N\left[\begin{pmatrix} m_{\alpha is0} \\ m_{\beta1 is0} \end{pmatrix}, \begin{pmatrix} C_{\alpha is0} & 0 \\ 0 & C_{\beta1 is0} \end{pmatrix}\right],$$

where $F_{ist} = [1, X1_{ist}]'$ , $\theta_{ist} = [\alpha_{ist}, \beta1_{ist}]'$, $G_{is} = [\sigma_{is}, \varphi_{is}]'$, $h_{ist} = [\mu_{is}, \lambda_{is}]' + [\gamma_{is}, \psi_{is}]' * (Sponsor_t * Z_t)$

The following algorithm, dropping the brand subscript i and store subscript s for simplicity, describes how we estimate the model parameters. We repeat Step 1 to 6 for each brand at each store and then we shrink these brand specific parameters in Step 7a and 7b:

**Step 1:** $\theta_t | Y_t, V, W, \beta, G, h_t.$

Following the Forward-filtering backward-sampling algorithm (Carter & Kohn, 1994; Frühwirth-Schnatter, 1994), we first forward filter to obtain the moments $m_t$ and $C_t$ for $t = 1, \dots, T$.

The posterior for $\theta_{t-1}$ : $\quad (\theta_{t-1} | D_{t-1}) \sim N[m_{t-1}, C_{t-1}].$

Prior for $\theta_{t-1}$ : $\quad (\theta_t | D_{t-1}) \sim N[a_t, R_t]$ where $\quad a_t = Gm_{t-1} + h_t$ and $R_t = GC_{t-1}G' + W$.

One-step forecast : $\quad \widetilde{Y}_t | D_{t-1} \sim N(f_t, Q_t)$ where $\widetilde{Y}_t = Y_t - X'_t\beta,$ $\quad f_t = F_t a_t$ and $Q_t = F_t R_t F'_t + V$.

Posterior for $\theta_t$ : $\quad \theta_t | D_t \sim N[m_t, C_t]$ where $\quad m_t = a_t + R_t F'_t Q_t^{-1}(\widetilde{Y}_t - f_t), C_t = R_t - R_t F'_t Q_t^{-1} F_t R_t.$

We then sample $\theta_t$ at $t = T$ from $(\theta_t | D_t) \sim N[m_t, C_t]$. Next, we sample $\theta_t$ backward for $t = T - 1, \dots, 1$ from $p(\theta_t | Q_{t+1}, D_t) \sim N(q_t^*, Q_t^*)$, where $q_t^* = m_t + B_t(Q_{t+1} - a_{t+1}),$ $Q_t^* = C_t - B_t R_{t+1} B'_t,$ and $B_t = C_t G' R_{t+1}^{-1}$. We use $m_0 = 0$ and $C_0 = 10$.

**Step 2:**   $V \mid \theta_t, Y_t, \beta.$

We place an inverse gamma prior, with $(n_{v0}/2, S_{v0}/2)$. The full conditional posterior distribution is inverse gamma with $(n_{v1}/2, S_{v1}/2)$ where   $n_{v1} = n_{v0} + T$ and $S_{v1} = S_{v0} + \sum_{t=1}^{T}(Y_t - X_t'\beta - F_t\theta_t)'(Y_t - X_t'\beta - F_t\theta_t)$. We select a diffuse prior with $n_{v0}=3$ and $S_{v0}=0.1$.

**Step 3:**   $W \mid \theta_t, \sigma, \varphi, \mu, \gamma, \lambda, \psi.$

We place an inverse gamma prior, with $(n_{w0}/2, S_{w0}/2)$. The full conditional posterior distribution is inverse gamma with $(n_{w1}/2, S_{w1}/2)$ where   $n_{w1} = n_{w0} + T$ and $S_{w1} = S_{w0} + \sum_{t=1}^{T}(\theta_t - G\theta_{t-1} - h_t)'(\theta_t - G\theta_{t-1} - h_t)$. We select a diffuse prior  $n_{w0}=3$ and $S_{w0}=0.1$.

**Step 4:**   $\sigma, \varphi \mid \theta_t, W, \mu, \gamma, \lambda, \psi.$

We discuss the estimation of $\sigma$. The estimation of $\varphi$ follows directly. We define  $\sigma = \frac{e^{\xi}}{1+e^{\xi}}$ and the prior on the parameters is normal with $\xi \sim N(\underline{\zeta_{\xi}}, \underline{o_{\xi}})$. We use a random walk Metropolis-Hastings step to draw $\xi$. The candidate $\xi$ at iteration $m$ is generated by $\xi^{(m)} = \xi^{(m-1)} + z$ where $z$ is a random draw from $N(0, \kappa I)$. We select $\kappa$ such that the acceptance rate is between $20\% - 50\%$. The candidate $\xi^{(m)}$ is accepted when $\alpha \geq u$ where $u$ is uniform with $u \sim U(0,1)$ and

$$\alpha = \frac{e^{-\frac{1}{2}(\xi^{(m)}-\underline{\zeta_{\xi}})'\underline{o_{\xi}}(\xi^{(m)}-\underline{\zeta_{\xi}})}}{e^{-\frac{1}{2}(\xi^{(m-1)}-\underline{\zeta_{\xi}})'\underline{o_{\xi}}(\xi^{(m-1)}-\underline{\zeta_{\xi}})}} * \frac{e^{-\frac{1}{2}(\theta_t - \frac{e^{\xi^{(m)}}}{1+e^{\xi^{(m)}}}\theta_{t-1}-h_t)W_T^{-1}(\theta_t - \frac{e^{\xi^{(m)}}}{1+e^{\xi^{(m)}}}\theta_{t-1}-h_t)'}}{e^{-\frac{1}{2}(\theta_t - \frac{e^{\xi^{(m-1)}}}{1+e^{\xi^{(m-1)}}}\theta_{t-1}-h_t)W_T^{-1}(\theta_t - \frac{e^{\xi^{(m-1)}}}{1+e^{\xi^{(m-1)}}}\theta_{t-1}-h_t)'}}$$

**Step 5:**   $\mu, \gamma, \lambda, \psi \mid \theta_t, W, \sigma, \varphi.$

We define  $\rho = [\mu, \gamma]$ and $K_t = [I_t, (Sponsor_t * Z_t)]$. The prior on the parameters is normal with  $\rho \sim N(\underline{\zeta_{\rho}}, \underline{o_{\rho}})$ . Then, the full conditional posterior is normal with $\rho \sim N(\overline{\zeta}_{\rho}, \overline{o}_{\rho})$ where $\overline{\zeta}_{\rho} = \overline{o}_{\rho}\left\{\underline{o_{\rho}^{-1}}\underline{\zeta_{\rho}} + [K_t W_T^{-1}\overline{\theta}_t]\right\}$,    $\overline{o}_{\rho} = \{\underline{o_{\rho}^{-1}} + [K_t W_T^{-1}K_t']\}^{-1}$ , $\overline{\theta}_t = \theta_t - \lambda\theta_{t-1}$ and $W_T = W \otimes I_T$. The estimation of $\rho = [\lambda, \psi]$ follows directly.

**Step 6:** $\beta \mid \theta_t, V$.

The prior on the parameters is normal with $\beta \sim N(\underline{\zeta}_\beta, \underline{o}_\beta)$. The full conditional posterior is normal with $\beta \sim N(\overline{\zeta}_\beta, \overline{o}_\beta)$, where $\overline{\zeta}_\beta = \overline{o}_\beta \left\{\underline{o}_\beta^{-1}\underline{\zeta}_\beta + \left[X_t V_T^{-1}\overline{Y}_t\right]\right\}$, $\overline{o}_\beta = \{\underline{o}_\beta^{-1} + [X_t V_T^{-1}X_t']\}^{-1}$, $\overline{Y}_t = Y_t - F_t\theta_t, V_T = V \otimes I_T$.

**Step 7a:** $\delta \mid \beta, \mu, \lambda$

In previous steps we estimated brand specific parameters. In this step we shrink the estimates for $\beta, \mu, \lambda$ across brands. We discuss only the shrinkage of $\beta$. The shrinkage of $\mu$ and $\lambda$ follows directly.

We place a normal prior on $\underline{\zeta}_\beta$ : $\zeta_\beta \sim N(\underline{\pi}_\beta, \underline{\tau}_\beta)$. The full conditional posterior is normal with $\zeta_\beta \sim N(\overline{\pi}_\beta, \overline{\tau}_\beta)$ where $\overline{\pi}_\beta = \overline{\tau}_\beta\{\underline{\tau}_\beta^{-1}\underline{\pi}_\beta + \left[I_i U_{\beta I_N}^{-1}\beta_i\right]\}$, $\overline{\tau}_\beta = \{\underline{\tau}_\beta^{-1} + \left[I U_{\beta I_N}^{-1}I\right]\}^{-1}$, $U_{\beta I_N} = U_\beta \otimes I_N$. $I_N$ indicates the total number of brands. We use $\underline{\pi}_\beta = 0$ and $\underline{\tau}_\beta = 1000$.

We place an inverse gamma prior on $\underline{o}_\beta$ with $(n_{u0}/2, S_{u0}/2)$. The full conditional posterior distribution is inverse gamma with $(n_{u1}/2, S_{u1}/2)$ where $n_{u1} = n_{u0} + I_N$ and $S_{u1} = S_{u0} + \sum_{i=1}^{I_N}(\beta_i - \underline{\pi}_\beta)'(\beta_i - \underline{\pi}_\beta)$. We select a diffuse prior $n_{u0}$=3 and $S_{u0}$=0.1.

**Step 7b:** $\eta \mid \gamma, \psi, \sigma, \varphi, \Sigma$.

We discuss estimation of $\eta_\gamma$. The estimation of $\eta_\psi, \eta_\sigma, \eta_\varphi$ follows directly. We define $\eta_\gamma = [\eta_{0\gamma}, \eta_{1\gamma}, \eta_{2\gamma}, \eta_{3\gamma}, \eta_{4\gamma}, \eta_{5\gamma}]$ and $L_i = [I_i, SB_i, LB_i, SM_i, SB_i * SM_i, LB_i * SM_i]$. We place a normal prior on the parameters with $\underline{\zeta}_{\eta_\gamma} \sim N(\underline{\pi}_{\eta_\gamma}, \underline{\tau}_{\eta_\gamma})$. Then, the full conditional posterior is normal with $\underline{\zeta}_{\eta_\gamma} \sim N(\overline{\pi}_{\eta_\gamma}, \overline{\tau}_{\eta_\gamma})$ where $\overline{\pi}_{\eta_\gamma} = \overline{\tau}_{\eta_\gamma}\left\{\underline{\tau}_{\eta_\gamma}^{-1}\underline{\pi}_{\eta_\gamma} + \left[L_i\Sigma_{I_N}^{-1}\gamma_i\right]\right\}$, $\overline{\tau}_{\eta_\gamma} = \{\underline{\tau}_{\eta_\gamma}^{-1} + \left[L_i\Sigma_{I_N}^{-1}L_i\right]\}^{-1}$, and $\Sigma_{I_N} = \Sigma_\gamma \otimes I_N$. We use $\underline{\pi}_{\eta_\gamma} = 0$ and $\underline{\tau}_{\eta_\gamma} = 1000$.

We place an inverse gamma prior on $\underline{o}_\gamma$ with $(n_{\varepsilon0}/2, S_{\varepsilon0}/2)$. The full conditional posterior distribution is inverse gamma with $(n_{\varepsilon1}/2, S_{\varepsilon1}/2)$ where $n_{\varepsilon1} = n_{\varepsilon0} + I_N$ and $S_{\varepsilon1} = S_{\varepsilon0} + \sum_{i=1}^{I_N}(\gamma_i - \eta_i L_i)'(\gamma_i - \eta_i L_i)$ where $I_N$ indicates the total number of brands. We select a diffuse prior $n_{\varepsilon0}$=3 and $S_{\varepsilon0}$=0.1.

# Chapter 5

# Conclusion

T his dissertation consists of three research papers on the effectiveness of some of the most commonly utilized revitalization strategies in consumer products markets. This final chapter reviews their main findings of each study included in this dissertation, highlights theoretical contributions, discusses managerial implications for practitioners, and finally, suggests future research avenues.

## 5.1   Firm Value Effects of Brand Divestitures

For several years, consumer products manufacturers have devoted much of their attention to expanding their brand offerings through launching new brands or subbrands to sustain growth in their corresponding markets. For example, the 70s and 80s were the golden age of mergers, brand acquisitions, and brand creations, as popular ways for companies to extend their geographical footprint, expand market power, meet consumers'

evolving and ever-increasing need for variety, and gain economies of scale. These efforts, however, often resulted in increased complexity and decreased brand strength. As new brands frequently come in to the market and consumer preferences continually evolve, brand portfolios have been littered with brands which were once strong and relevant but were unsuccessful to meet the changing needs of the competitive marketplace. For many firms, the bulk of the profits come from only a small number of brands (Kumar, 2003). Bloated brand portfolios have increased managerial complexity, decreased focus, and eventually, pulled back large gains achieved in previous years. Several consumer product manufacturers, therefore, have engaged in rationalization efforts to release resources and reallocate them to meet the needs of the retained brands in the portfolio. They have followed different strategies and realized diverse outcomes of brand divestitures in terms of firm performance. In line with these considerations, the first research paper in my dissertation empirically investigates the effects of different types of focus-increasing brand divestitures on firm value.

I integrate two common motives for focus-increasing brand divestitures, global branding and refocusing on core businesses, in a single common framework. Utilizing an event study, I assess the stock market's reaction to a firm's brand divestment activities and investigate whether the divested brand's industry relatedness and geographical scope influence firm value effects of focus increasing brand divestitures. Analyzing a large set of divestment announcements in the global food and beverage industries, I find that the divestiture of brands with low relatedness and low geographical scope enhances firm value. However, my results also show that, on average, firms experience negative firm value effects of divesting brands with high geographical scope or high relatedness. Although divesting core business brands with low geographical scope, for the purpose of focusing on

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global brands, is a very common form of brand divestitures, it appears to destroy firm value, especially in home regions where companies typically enjoy higher profit margins.

This study contributes to both the international business literature and the strategic marketing literature by empirically investigating the firm value effects of brand divestitures from a multidisciplinary perspective. The international business literature provides insights on the firm value effects of divesting non-core business assets but the focus is not specifically on brand assets (Desai & Jain, 1999; John & Ofek, 1995). The international branding literature discusses the advantages of rationalizing local brands and focusing on a few number of core, global brands (e.g., Kapferer, 2002; Schuiling & Kapferer, 2004) but does not provide any empirical evidence for possible firm value-enhancing effects of brand divestitures.

This study provides relevant implications for managers of rationalizing firms. The findings indicate that companies should rationalize their portfolio through eliminating brands with low geographical scope and low relatedness. Earlier marketing studies (Meyer, 2006; Meyer, 2009) argue that refocusing on core businesses and global branding are simultaneously redesigning firms' business activities. In this study, I show that brand divestitures undertaken for global-focusing purposes do not always enhance firm value. Eliminating local favorites in favor of global brands in core businesses can be risky. Therefore, companies should rationalize their brand offerings toward a portfolio that follow a multi-tier branding strategy in core businesses. Such a portfolio of global and local brands will serve different segments of the market. Companies can enjoy higher margins by attracting premium segments with global brands and enjoy greater market shares by fulfilling fragmented consumer needs with local brands.

In this research I conducted an event study which uses shareholder returns as a proxy for firm value. It would be interesting to investigate how brand divestitures influence other measures of firm performance such as revenues, profits, production efficiency, and operating margins (see Srinivasan & Hanssens, 2009 for a review of methods and metrics used in assessing the effect of marketing on firm value). Further research could also explore whether other brand (e.g., age, perceived quality, channel specificity, brand performance), firm (e.g., number of brands in the portfolio, liquidity, managerial experience), and market (e.g., market size, market growth rate) characteristics moderate the effects of brand divestitures on firm value (see Varadarajan et al., 2006 for a comprehensive list of brand, firm, and market characteristics which drive firms' divestiture decisions).

## 5.2   Who Benefits from Brand Exits? Why?

As it was also discussed in Chapter 2, the number of brands in many consumer products categories has increased dramatically in recent years (Carlotti et al., 2004). Meanwhile, the rise of private label products has encouraged retailers to devote less shelf space for branded products. While the number of brands is continually increasing while shelf space becomes scarce, several consumer brand manufacturers have faced with complex decisions about which brands to place on shelves. They have started pruning weak brands and built their strategies around a small set of leading brands rather than negotiating shelf space for a large number of small brands (Court, French, Knudsen, & Webb, 2006). Retailers, simultaneously, have reduced the number of national brands to free up shelf space for their expanding private label offerings and/or optimize their assortments (Sloot & Verhoef, 2008). As a result several brands have disappeared from store shelves.

The increasing number of brand exits raises several questions regarding what might happen in the aftermath of an exit. When a brand disappears from the market, which of the remaining brands are best positioned to claim the demand that frees up? How should firms manage their brand portfolios to cover the market segment of the deleted brand? Given the wider managerial relevance of these questions, the second research paper in my dissertation focuses on the aftermath of brand exits and investigates who benefits from brand exits and why. More specifically, I examine how sales of an incumbent brand respond to a brand exit and identify the long term drivers of demand redistribution following the exit. I develop a dynamic linear brand sales response model that allows for gradual adjustment of brand exit effects and relates these effects to brand characteristics, attribute similarity of brands, and marketing efforts of the incumbent brand.

Applying the model to 96 brand exit events and analyzing the sales response of 555 incumbent brands across 2 repeat-purchase product categories (deodorant and milk), I find that brand characteristics, attribute similarities, and post-exit marketing strategies explain variations in sales response to a brand exit. Results of the analysis in the milk category imply that higher market share incumbent brands tend to gain less after brand exits. Incumbent brands tend to gain more from an exit as the market share of the deleted brand increases. In the deodorant category, however, both effects are negligible. Results also suggest that incumbent brands which are similar to the deleted brands on certain product attributes stand to gain from the exit disproportionally. For example, gains from an exit increase with package similarity for incumbent milk brands. In the deodorant category, similarities on type (e.g., antiperspirant) and form attributes (e.g., cream, gel, spray) give an edge to incumbent brands in claiming freed up demand. I find that increasing brand assortment size and the frequency of non-price oriented sales promotions are two effective

post-exit strategies that bring higher gains from exits. Price oriented promotions, on the contrary; seem to be ineffective in attracting consumers of the deleted brand. The effects of post-exit strategies are consistent across two product categories.

This study extends the existing literature on brand exits by identifying the long term drivers of demand redistribution among incumbent brands following an exit. Earlier research on 'how consumers respond to unavailability of product/brand alternatives' mostly focused on permanent (e.g., assortment reductions) or temporary unavailability (e.g., stock-outs) of products and provided valuable insights mostly on category level effects (e.g., Boatwright & Nunes, 2001; Borle et al., 2005) and to a lesser extent on brand level effects (Zhang & Krishna, 2007). To the best of my knowledge, the currently described study is the first to investigate the brand level effects of brand exits (i.e., permanent unavailability of brands).

The findings of this study, taken together, provide a number of insights to manufacturers of deleted brands, competing brands, and retailers. First, companies rationalizing their brand offerings need a thorough understanding of what brands are more likely to benefit from an exit to take wiser decisions on what brands to delete. Using our model, they will be able to assess how freed up demand will be redistributed among existing brands after an exit.

Second, our results help managers of incumbent brands better manage the post-exit process. Rationalizing firms often enhance resources behind retained brands to improve their performance (Varadarajan et al., 2006). Competing firms want to claim consumers of a deleted brand. Managers of both rationalizing and competing firms, therefore, would prefer focusing their marketing efforts on where they will have the most impact following a brand exit. Our results imply that these managers should prefer increasing non-price

promotion frequency and the number of brand's products in the store over increasing the frequency of price-oriented sales promotions.

Third, retailers, which frequently delist national brands to free up shelf space for their own private labels, can also benefit from our model and findings. As retailers enjoy different profit margins from different brands, redistribution of demand after an exit has a direct effect on their profitability. By foreseeing possible brand switching patterns following an exit, (1) they can accurately identify redundant brand offerings and take wiser brand delisting decisions and (2) they will be able to mitigate sales losses after manufacturer's brand deletion decisions by adjusting their portfolio of offerings accordingly.

Our results indicate that the long-term drivers of demand distribution can change across product categories. In the milk category, for example, smaller market share brands stand to gain more than larger ones after a brand exit. However, the market share of the incumbent brand has no effect on excess demand redistribution in the deodorant category. Further research could analyze the sales response to a brand exit across multiple categories and investigate whether differences in effects can be related to category specific factors (e.g., category purchase incidence, uncertainty about product attributes).

## 5.3  Energizing Sales Through Sponsorships

Today's competitive and ever-changing markets pose significant challenges for marketers. It is difficult to keep brands and brand portfolios relevant and differentiated as consumer tastes and preferences continue to evolve and fragment. Such challenges are perhaps even greater for mature brands in low involvement product categories where brands do not differ markedly from one another with respect to their functional benefits.

Those brands often get tired, lack energy, and need external brand energizers to stay relevant (Aaker, 2004). A sponsorship deal offers a number of opportunities for energizing a brand as it influences consumers' decision making process in a multitude of ways. It can provide exposure, develop or transform a brand image, create favorable attitudes, deliver additional emotional and self-expressive benefits, encourage trial, and enhance loyalty (e.g., Levin et al., 2001; Mazodier & Merunka, 2012; Nicholls et al., 1999; Quester & Thompson, 2001; Sirgy et al., 2008).

Consistent with the well documented influential role of sponsorship on consumers' brand evaluations, over the last several years, companies have invested increasing amounts of money in sponsorships. As a result, the total volume of global sponsorship spending is expected to reach $60 billion by the end of 2016, corresponding to a 4.6% increase over the previous year (IEG, 2016). Considering the vast sums of money involved, a thorough understanding of sponsorship effectiveness and an accurate measurement of the return on investment in sponsorship initiatives have become vital necessities for sponsoring firms. A majority of the managers of sponsoring brands indicate that the need to certify sponsorship results has grown over the past years (ANA, 2013). In parallel to this need, the third research paper in my dissertation addresses the issue of sponsorship effectiveness.

In Chapter 4, more specifically, I examine the effect of a partnership deal with a major sports franchise on the sales performance of the partnering and of competing firms in a mature and low involvement product category. I develop a dynamic linear model of brand sales, which (1) identifies the effect of a sponsorship deal on baseline sales of a brand and (2) explains variations in sales responses across markets (sponsored vs. non-sponsored) and brands (partnering brands of a sponsored firm, other brands in the portfolio of the sponsored firm, and brands of competing firms). I apply my model to

partnership deals between beer brands and sports franchises in the National Football League. I find that a partnering brand enjoys a gain in baseline sales and an increased effectiveness for its sales promotion instruments. The effect of sponsorship on baseline sales evolves over the course of a sponsorship contract contingent on team performance. The findings also indicate that a sponsorship generates brand switching from competitors including sponsoring firm's other brands.

My study contributes to the marketing literature in a number of ways. First, it addresses uncertainty about the sales effects of sponsorships. Existing research has mainly focused on drivers of sponsorship deals (e.g., Chien et al., 2011; Cornwell & Maignan, 1998; Crowley, 1991; Gwinner & Eaton, 1999) and the effects of sponsorships on consumer liking (e.g., Lardinoit & Quester, 2001; Quester & Thompson, 2001). The findings indicate that positive effects of sponsorship on consumer liking and other behavioral measures also translate into positive sales results. Second, we offer a method to assess the effectiveness of sponsorships. Our model isolates the effect from that of other concurrent marketing activities and can relate sponsorship effects to brand, market, and team factors in a dynamic setting. Third, although sponsorships have been considered as an important component of the integrated marketing communication mix, existing research has not empirically investigated how sponsorship interacts with other promotional mix elements. In my study I show that a sponsorship increases the effectiveness of sales promotions. Fourth, I provide empirical evidence on the negative effects of a sponsorship on competing brand sales and show that other brands of the sponsoring firm are likely to experience sales declines after the sponsorship.

My study provides valuable implications for practitioners. According to a recent survey on measuring sponsorship effectiveness, managers of the sponsoring brands

indicate that sales is the most valuable, but less utilized metric to measure return on investment in sponsorships (ANA, 2013). It is often considered difficult to evaluate the long-term effect of a sponsorship on sales as a variety of marketing activities influence sales (Crompton, 2004). For example, according to the abovementioned survey, only half of the managers attempt to isolate the effect of sponsorship from that of other marketing initiatives (ANA, 2013). This study provides a method for measuring the effect of sponsorship on sales, a very relevant and valuable metric for the majority of sponsoring brands managers.

My findings provide additional insights for managers of sponsoring brands. First, they should consider interactions between sponsorships and other promotional elements to achieve an effective promotional mix. Results imply that sponsorships and sales promotions may have complimentary functions within the integrated marketing communications program and that they interact in ways that create synergistic effects. Second, the sponsorship decision should be based not only on previous or current team performance, but also on the future performance. The expected performance obviously becomes more important when brands are sponsoring teams competing in highly competitive leagues with a great variation in team performance over time. Most professional leagues in Northern America consistently try to maintain competitive balance among teams through salary cap and draft systems. Third, managers should pay attention to the effects of sponsorships on sales performance of other brands in their brand portfolio. My results indicate a threat of cannibalization as sibling brands of the sponsoring firm, the ones which are marketed under the same parent brand name with the sponsored brand, experience a decline in their baseline sales in sponsored markets.

It is important to note that there are some limitations in this study. I examine sales responses to sponsorship deals in the beer category. Further research may extend the findings of this study by investigating sponsorship deals in other product categories. An examination of sponsorships in another product category where a large number of different brands sponsor different teams would provide valuable insights. It would lead to a better understanding of how team specific (e.g., fan size) and brand specific (e.g., awareness, equity) factors drive sales responses to sponsorships.

## 5.4 Revitalizing Brands and Brand Portfolios

In this thesis, I show that certain revitalization strategies can energize brands and brand portfolios. However, it should be recognized that there are risks inherent to these strategies. My findings collectively lay out the importance of pursuing a portfolio approach to achieve greater success in executing them. Firms should acquire a thorough understanding of how their revitalization efforts can be linked to the performance of each brand in their portfolio by carefully considering individual brands' roles and their relationships with one another.

Finally, to return to the very first question posed in this dissertation, it can be very challenging to stay relevant and energetic in today's competitive and ever-changing markets. Brands can lack energy and brand portfolios can get bloated. However, if executed wisely and discerningly, companies can revitalize their offerings to maintain growth even in proliferating environments. It kind of resembles navigating through rough seas. It is difficult to navigate a bloated ship with a tired crew across a rough sea, yet "the wind and the waves are always on the side of the ablest navigator" (Gibbon, 1776).

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# Summary (in English)

In today's ever-changing and proliferating consumer products markets, manufacturers and retailers pursue a variety of strategies to keep their portfolio of brand offerings relevant and energetic. In this dissertation, I explore the effectiveness of some of the most commonly utilized 'revitalization' strategies.

In chapter 2, I examine firm value effects of focus-increasing brand divestitures. These divestitures are undertaken to release resources and reallocate them to support the retained brands in the portfolio. I propose that divesting brands with low geographical scope and low industry relatedness can enhance firm value. In line with this prediction, I document positive shareholder returns due to such divestments. However, I find divesting local brands in core industries, a common form of brand divestitures, has negative effects on firm value.

In chapter 3, I focus on brand exits (i.e., the removal of a brand from a market either by a manufacturer or a retailer). I examine how sales of an incumbent brand respond to a brand exit and identify the long term drivers of demand redistribution following the exit. I find that brand characteristics (market shares of an incumbent and a deleted brand), the incumbent brand's similarity to the deleted brand on a multidimensional attribute space, and post-exit marketing strategies (frequency of non-price promotions and change in brand assortment size) explain variations in sales response to a brand exit.

In chapter 4, I move away from strategies involving simplification of brand offerings and focus on sponsorships which is a commonly utilized strategy to energize established brands in mature product categories. I investigate how a sponsorship deal affects the sales performance of the partnering brand, other brands of the sponsoring firm, and competing brands in the product category. I find that the sponsoring brand experiences a gain in baseline sales and an increased effectiveness for its sales promotion instruments. The effect on baseline sales evolves over time contingent on team performance. The results also indicate that sponsorship generates brand switching from competitors including competing brands of the partnering firm.

This dissertation provides insight on how to revitalize brands and brand portfolios. My findings collectively highlight the importance of pursuing a portfolio approach in successfully executing revitalization strategies. Firms, therefore, should acquire a thorough understanding of how their revitalization efforts can be linked to the performance of each brand in their portfolio by carefully considering individual brands' roles and their relationships with one another.

## Summary (in Dutch)

In de voortdurend veranderende consumentengoederen markten van vandaag de dag, streven producenten en retailers er door middel van verschillende strategieën naar om hun merkportfolio's relevant en te houden. In dit proefschrift onderzoek ik de effectiviteit van een aantal van de meest gebruikte 'revitaliseringstrategieën'.

In hoofdstuk 2 onderzoek ik de effecten van focus vergrotende merkafstotingen op de waarde van ondernemingen. Deze afstotingen worden ondernomen om middelen vrij te maken ter ondersteuning van de behouden merken in de portfolio. Ik veronderstel dat het afstoten van merken met een geringe geografische omvang en lage industrie verbondenheid de waarde van ondernemingen kan verhogen. In lijn met deze verwachting neem ik een positief rendement voor aandeelhouders als gevolg van dergelijke afstotingen waar. Daarentegen, observeer ik dat het afstoten van lokale merken in kernsectoren, een veel voorkomende vorm van het merkafstotingen, een negatief effect heeft op de waarde van ondernemingen.

In hoofdstuk 3 richt ik mij op exits uit de markt van merken (i.e., het verwijderen van een merk uit de markt, hetzij door de producent of door de retailer). Ik onderzoek hoe de verkopen van een gevestigd merk reageeen op een merk exit en identificeer de lange termijn effecten van de herverdeling van vraag en aanbod naar aanleiding van zo'n exit. Mijn observatie is dat merk karakteristieken (marktaandeel van gevestigd en verdwenen merk), de gelijkenis tussen het gevestigde merk en verdwenen merk, en post-exit marketingstrategieën (frequentie van niet prijs gerelateerde reclames en verandering in merk assortiment grootte) de variatie in reacties op merk extits verklaren.

In hoofdstuk 4 verleg ik mijn aandacht van strategieën met betrekking tot de vereenvoudiging van het merk aanbod naar sponsoring, een wijd gebruikte strategie is om gevestigde merken in volwassen productcategorieën te revitaliseren. Ik onderzoek hoe een sponsorovereenkomst van invloed is op de verkoopresultaten van het sponsorende merk , andere merken van het sponsorende bedrijf, en concurrerende merken binnen de productcategorie. Mijn observatie is dat het sponsorende merk een toename ervaart in de verkopen en een toename in de effectiviteit van verkoop promotie-instrumenten. Het

effect op de verkopen ontwikkelt zich in de loop van de tijd afhankelijk van de team prestaties. De resultaten geven ook aan dat sponsoring leidt tot het overstappen van consumenten van concurrerende merken waaronder de concurrerende merken van het sponsorende bedrijf zelf.

Samenvattend geven de studies in dit proefschrift inzicht in de wijze waarop merken en merkportfolio's gerevitaliseerd kunnen worden. Mijn bevindingen benadrukken het belang van het nastreven van een portfolio benadering voor het succesvol uitvoeren van revitaliseringstrategieën. Ondernemingen moeten inzicht krijgen in de wijze waarop hun revitaliseringsinspanningen gekoppeld kunnen worden aan de prestaties van ieder merk in hun portfolio, door zorgvuldig de rollen van individuele merken en de relaties van deze individuele merken met elkaar te overwegen.

## Summary (in Turkish)

Günümüzün sürekli değişen ve kalabalıklaşan hızlı tüketim ürünleri pazarlarında, üreticiler ve perakendeciler müşterilere sundukları marka ve marka portföylerini sürekli canlı ve güncel tutmak adına farklı stratejiler izler. Bu doktora tezi sıklıkla takip edilen bazı marka ve marka portföyü canlandırma stratejilerinin verimliliğini araştırmaktadır.

Giriş bölümünden sonra yer alan ikinci bölümde, üreticilerin odak arttırma amacıyla gerçekleştirdikleri portföy sadeleştirme stratejileri ele alınmaktadır. Bu stratejiler bazı markaların portföyden çıkarılması sonucu elde edilen kaynakların kalan markaların desteklenmesi ve canlandırılması için kullanımını içerir. Farklı sanayi bölümlerinden düşük coğrafi kapsama sahip markaların elden çıkarılmasının firma değerine olumlu etkilerinin olacağı önerilmiş ve analizler sonucunda bu tarz sadeleştirmelerin firmanın hissedar değeri üzerinde artı yönde etkileri gözlemlenmiştir. Uygulamada oldukça fazla görülmesine rağmen ana sanayi bölümlerinde faaliyet gösteren yerel markaların elden çıkarılmasının firma değerine olumsuz etki yaptığı saptanmıştır.

Üçüncü bölüm pazardan çıkan bir markanın ardından boşta kalan talebin kalan markalar tarafından uzun vadede nasıl paylaşıldığını incelemektedir. Talebin dağılımına etki eden faktörler arasında çıkan ve kalan markaların pazar payları, çıkan ve kalan markaların ürünlerinin nitelik olarak birbirine benzerliği ve kalan markaların pazarlama stratejileri yer almaktadır.

Dördüncü bölüm marka portföyünü sadeleştirmeyi öncelikli hedef olarak alan stratejilerden uzaklaşıp portföy içinde kalan markaların nasıl desteklenebileceğine odaklanmaktadır. Bu amaçla olgun pazarlarda yerleşik markalara yeniden enerji vermek için sıklıkla kullanılan bir iletişim stratejisi olan sponsorluk anlaşmaları incelenmektedir. Sponsorluk anlaşmalarının sponsor olan markanın ve rakiplerinin satış performansına olan etkisi araştırılmış ve sponsor markanın temel satış çizgisinde ve satış promosyonlarının verimliliğinde bir artış gözlemlenmiştir. Ana satış çizgisinde olan artış sponsorluk süresince takım performansına bağlı olarak değişmektedir. Ayrıca sonuçlar sponsorluk dolayısıyla sponsor firmanın diğer markaları dahil rakiplerin satış kaybı yaşadıklarını göstermektedir.

Bu tez marka ve marka portföyünün nasıl canlandırılması gerektiğine dair bir anlayış sunmaktadır. Sonuçlar bir bütün olarak marka portföyü yönetiminin önemine işaret etmektedir. Firmalar, canlandırma stratejilerinde başarıya ulaşmak adına, portföylerinde bulunan her bir markanın rolünü ve diğer markalarla etkileşimini dikkatlice gözetip ve her bir markanın stratejilerinden nasıl etkileneceğini hesaplamalıdırlar.

## About the author



Barış Erman Depecik received his Bachelor's degree in Electrical and Electronics Engineering from Bilkent University in Ankara, Turkey. He received his Masters' degrees in Economics from Sabancı University in İstanbul, Turkey. Prior to his Ph.D. at Rotterdam School of Management, Erasmus University, he worked at Finansbank, Hewlett & Packard Company, and TEB Investment-BNP Paribas. Currently, he is working as an Assistant Professor of Marketing at the Faculty of Business Administration, Bilkent University.

He studies empirical quantitative marketing with specific interests in marketing communications, advertising, retailing, branding, and brand portfolio management. He presented his research in several international conferences. He has taught a variety of marketing courses at the undergraduate and master's levels and in executive development and entrepreneurship education programs.

## Portfolio

Journal Articles

Depecik, B., Everdingen, Y. M. van, & Bruggen, G. H. van (2014). "Firm Value Effects of Global, Regional, and Local Brand Divestments in Core and Non-Core Businesses." *Global Strategy Journal,* 4(2), 143-160.

Proceedings & Professional Publications:

Depecik, B. & Bruggen, G. H (2016). "Do Partnerships with Major Sports Franchises Pay Off?" *Sport Marketing and Sponsorship Conference 2016 - Conference Proceedings* (p. 13).

Everdingen, Y.M. van, Depecik, B. & Bruggen, G.H. van (2015). "Het effect van mersaneringen op de waarde van ondernemingen." *Ontwikkelingen in het Marktonderzoek / Jaarboek MOA.*

Selected Research in Progress:

Depecik, B. & Ataman, B. "Who Benefits from Brand Exits? Why?"

Depecik, B. & Bruggen, G. H. "Energizing Sales Through Sponsorships."

Depecik, B. "How to Reap the Rewards of a Brand Acquisition?"

Invited Talks, Seminars, and Conference Presentations

2016     Sport Marketing and Sponsorship Conference, Salzburg, Austria.

2013     Bilkent University

2013     American Marketing Association Conference, Boston, USA

2013     Transatlantic Doctoral Conference, London, UK.

2013     Doctoral Consortium, Marketing Science Conference, İstanbul, Turkey.

2012     Doctoral Consortium, Marketing Science Conference, Boston, USA.

2011     Doctoral Colloquium, European Marketing Academy, Ljubljana, Slovenia.

Teaching Experience

Bilkent University

| | |
|---|---|
| 2016 – | Fundamentals of Marketing (undergraduate) |
| 2015 – | Business Practice Course (MBA) |
| 2015 – | Digital Marketing (entrepreneurship education program) |
| 2014 – 2016 | Digital Marketing (executive development program) |
| 2014 – 2016 | Global Marketing and Emerging Markets (undergraduate) |
| 2014 – 2016 | Integrated Marketing Communications (undergraduate & MBA) |

Rotterdam School of Management, Erasmus University

| | |
|---|---|
| 2013 – 2014 | Master Thesis Supervisor |
| 2010 – 2013 | Bachelor Thesis Supervisor |

Selected Coursework (Course-Instructor-University)

| | |
|---|---|
| Marketing Models | Philip Hans Franses (Erasmus) |
| Managerial Decision Making | Jehoshua Eliashberg (Erasmus) |
| Behavioral Decision Theory | Stijn van Osselaer (Erasmus) |
| Research Methodology | Albert Jolink (Erasmus) |
| Applied Econometrics | Marno Verbeek (Erasmus) |
| Bayesian Econometrics | Richard Paap (Erasmus) |
| Statistical Methods | Patrick Groenen (Erasmus) |
| Advanced Econometrics | Fırat İnceoğlu (Sabancı) |
| Quantitative Research Methods | Alper Filiztekin (Sabancı) |
| Microeconomics | Mehmet Barlo (Sabancı) |
| Macroeconomics | Mehmet Yörükoglu (Sabancı) |
| Industrial Organization | İzak Atiyas (Sabancı) |
| Financial Instability in Emerging Markets | Caroline van Rijckeghem (Sabancı) |

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How should consumer products manufacturers and retailers keep their portfolio of brand offerings relevant and energetic when large numbers of new brands are continuously launched into a world of increasingly nonloyal customers with evolving needs? The harsh reality is, at a time when the demise of old brands has accelerated and even established brands are vulnerable, it stands to be a great deal of challenge. Fortunately, a number of 'revitalization' strategies can add relevance and energy to brands and brand portfolios.

This dissertation comprises three essays each of which explores the outcomes of a commonly utilized revitalization strategy. In Chapter 2 and Chapter 3, strategies involving simplification of brand offerings are at the center of interest. Chapter 4 departs from these chapters in that it focuses on sponsorship, a widely utilized external brand energizer.

The essays included in this dissertation show that companies can revitalize their offerings to maintain growth even in proliferating environments. My findings collectively lay out the importance of pursuing a portfolio approach to achieve greater success in executing revitalization strategies. Firms should acquire a thorough understanding of how their revitalization efforts can be linked to the performance of each brand in their portfolio by carefully considering individual brands' roles and their relationships with one another.

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