

Danish Cartoons, Muslim Outrage, and the Response of Multi-Product Brands

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Abstract:

On January 26th 2006, in response to the publication of 12 cartoons depicting the prophet Mohammad by *Jyllands-Posten*, Denmark's largest newspaper, the imams in Saudi Arabia called for a boycott on Danish products during the Friday prayers. Using scanner data on sales of cheese products in Saudi Arabia between 2005 and 2009 across hundreds of outlets I document that the boycott was devastating for Danish firms: their market share collapsed from 17% in January to below 1% in February. Even four years after the boycott ended, their market share never recovered. In December 2009 it was at just 5%.

The boycott provides a natural experiment to study how multi-product brands respond to economic shocks. I find that the drop in Danish sales came from the intensive margin, whereas the gains of non-Danish came from the extensive. Interestingly, half of the non-Danish brands benefited but the other half did not, which I attribute to different strategies they undertook in response to the boycott. Specifically, the well-known brands benefited from raising their prices but also from the increased competition that resulted from the introduction of new products in response to the boycott. In contrast, the increased competition hurt sales of fringe brands, especially those that raised prices in response to the boycott.

Keywords: boycott, multi-product firms, demand shock, Saudi Arabia

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I. Introduction

On January 26th 2006, the imams in Saudi Arabia called for a boycott on Danish products during the Friday prayers. The reason was the publication of 12 cartoons depicting the prophet Mohammad by *Jyllands-Posten*, Denmark's largest newspaper, which caused outrage amongst Muslims. Within a week, the call for boycott had spread to more than ten Arab countries.

In this paper I exploit a unique dataset to study what impact, if any, this boycott had on sales of Danish cheese in Saudi Arabia.² The dataset provides monthly scanner-level data on sales of cheese products across hundreds of retail outlets in the country between 2005 and 2009. For each outlet and each period I have access to transactions data, along with information on the outlet type, the region it belongs to, and whether the outlet is part of a chain.³ Each outlet's market share is also retrieved.

I document that the boycott had an immediate and extreme effect on Danish brands. Sales of Danish cheese dropped by a staggering 95% between January and February, with the market share of Danish brands collapsing from 17% to below 1%. What makes the impact of the boycott more impressive is that Danish cheese products were still on the retailers' shelves in February. Even after the boycott was called off in May of 2006, sales of Danish brands never recovered. In December 2009, the last month in our sample, Danish brands accounted for only 5% of all cheese sales.

Because the change in consumer preferences was sudden, unexpected, and dramatic, the boycott provides a great setting for evaluating how multiproduct brands respond to changes in

² Cheese and curd accounted for almost half of the Danish exports to the Gulf Cooperation Council countries in 2005 (UN COMTRADE). The Gulf Cooperation Council (GCC) countries are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. Of these, Saudi Arabia is by far the biggest economy. It accounts for about 84%, 70%, and 50% of the total land, population, and GDP of the GCC.

³ Transactions data refer to the total units of a particular item (barcode) sold within a particular period in a specific outlet and the price of the item in the particular store at the time (day) of the audit within that period. In addition, information is provided on the brand, manufacturer, package type, weight, flavor, and promotion. Outlet types offer a characterization of outlets based on size and function, such as supermarkets, groceries, mini-markets, cafeterias, and pharmacies.

market conditions.^{4,5} Studying how the Danish and non-Danish brands responded in the months during and after the boycott constitutes the main focus of this paper.

A few interesting facts come out of that analysis. First, Danish brands' losses were driven primarily by changes at the intensive margin, whereas gains of non-Danish brands were driven by changes at the extensive margin. That is, the number of Danish products available for consumption remained constant, but sales of each product suffered as a result of the boycott. In contrast, non-Danish brands responded to the boycott by introducing new products, most of which matched the Danish products in characteristics such as description, package type, and weight.⁶

Second, the impact of the boycott on non-Danish brands was very heterogeneous. While aggregate sales as a whole rose sharply, half these brands either shrunk or disappeared. In fact, the biggest winners and biggest losers were all small brands, as measured by sales in the months before the boycott.

Since brand size cannot explain performance what can? I show that a difference in strategies in response to the boycott provides an explanation for the performance of the non-Danish brands. The three dominant non-Danish brands introduced new products, raised prices of existing products, and experienced a moderate increase in sales. However, for small brands, introducing new products and raising prices of existing ones hurt sales. This occurred because the void left by the boycott on Danish products encouraged a substantial introduction of new products into

⁴ Bernard, Redding, and Schott (2011) use US data from 1972 to 1997 to show that multi-product firms (MPFs) are very common and important: they comprise 41% of all firms in the manufacturing sector, they account for 91% of output, and product switching within these firms explains a third of the total increase in real US manufacturing shipments during that period. Similarly, using Indian data, Goldberg et al. (2011) show that MPFs tend to be larger, more productive, and more likely to export.

⁵ To study how MPFs respond to economic shocks, some recent work examines intra-firm adjustments of MPFs after trade liberalizations. Hallak (2000) and Eckel and Neary (2010) provide a theoretical treatment and Baldwin and Gu (2006) and Bernard et al (forthcoming) an empirical. But since trade liberalizations are associated with a market-size effect (Eckel and Neary 2010), a competition effect (Eckel and Neary 2010), and a production outsourcing effect (Hallak 2000), disentangling the effects of the various shocks on the intra-firms adjustments is challenging.

⁶ Like Bernard et al. (2011), Goldberg et al. (2011), and Broda and Weinstein (2010), I find that product switching within the non-Danish brands is a far more important channel for adjustments than the entry and exit of brands.

the market, which brought about tougher competition. And because small brands responded with very different strategies, the impact of the boycott varied by brand.

To summarize, this study provides perhaps the most striking example of a successful boycott ever documented in the literature.⁷ Most importantly, because the boycott had such a sharp of an effect on sales of Danish products and because the data are available at the scanner level and across hundreds of outlets, I am able to analyze the response of Danish and non-Danish firms and complement a growing body of the literature that examines how multi-product firms respond to economic shocks, while highlighting the differences in behavior between top brands and fringe brands.

The remainder of the paper is organized as follows. In Section 2 I present some background information on the boycott against Danish products. I describe the dataset used to study the impact of the boycott in Section 3 and present the analysis in Section 4. Section 5 concludes.

II. The Boycott

On September 30th 2005, *Jyllands-Posten*, Denmark's largest newspaper printed 12 drawings depicting the Prophet Mohammad. Danish Muslim groups called the depiction of the Prophet in cartoons blasphemous and protested against the *Jyllands-Posten* publications. The debate between those who supported freedom of speech and those who supported respect for religion went global when the cartoons were reprinted in various publications in more than fifty countries in early 2006.

On January 26th 2006 Saudi Arabia recalled its ambassador from Denmark and initiated a boycott on Danish products. The call for the boycott was spearheaded by the imams during the Friday prayers. Within a week the boycott spread to Iraq, Yemen, Syria, Palestine, Bahrain, Qatar, the United Arab Emirates, Jordan, Algeria, Morocco, Tunisia, and Oman. On January 28th,

⁷ For an overview of the literature on consumer boycott see Friedman (1991, 1999) and references therein. John & Klein (2003) and Sen Gürhan-Canli, and Morwitz (2001) offer psychological explanations as to why consumers choose to participate or not. For a study related to ours that uses scanner data to study the impact of boycotts see Chavis and Leslie (2009). The authors study the impact of the US boycott on French wine during the 2003 Iraqi war and find that French wine sales dropped by about 13% over the six months they estimated the boycott to have lasted. Using more aggregate data, Ashenfelter et al. (2007) fail to find that the boycott on French wine has an impact on sales. For a more theoretical treatment of consumer boycotts see Innes (2006), Barron (2001, 2002, 2003) and references therein.

the Denmark-based Arla Dairy Group placed advertisements in Middle Eastern newspapers in an effort to stop the boycott of its products. Two days later, the EU Trade Commissionaire threatened to take the issue to the World Trade Organization if the boycott persisted. The next day Saudi hospitals refused to buy Danish insulin. In the following days violence broke out in many regions, including Syria, Lebanon, Pakistan, Iran and Gaza, where the Danish embassies were set on fire. It is believed that more than 140 people died during the violent protests. On April 24th an Al-Qaeda video of Osama Bin Laden emerged urging the Islamic Nations to continue the boycott.

In response to the public outcry against Denmark, and after they observed that consumers had stopped buying Danish goods, most retail outlets in Saudi Arabia joined the boycott in mid-March by removing all Danish products from their shelves. In May, Yusuf Al-Qaradawi, the most prominent Sunni religious cleric called off the boycott. Despite the end of the boycott, a local supermarket chain decided to keep Danish products off its shelves indefinitely. This particular chain accounted for about 40% of all supermarkets in Saudi Arabia. A timeline of the boycott is presented in *Appendix A*.

III. The Data

I study the impact of the boycott on Danish and non-Danish brands selling cheese products in Saudi Arabia. I chose Saudi Arabia for its conservative Muslim population and for the fact that monthly scanner-level data at the store level during and after the boycott are available.

The data come from Nielsen and cover sales of cheese products between 2005 and 2009. The frequency is monthly, and each observation describes the total quantity of a product (barcode) sold at a retail outlet in a given month and the price paid during the day of the audit. Nielsen also provides information on the brand, on the distributor or manufacturer, on the weight, on the package, on the variant, and on whether the product is under a promotion or not. “Kraft White 240 Glass Jar Blue” and “Lavachequirit White 240 Glass Jar Blue” are descriptions of two such barcodes.

I also have information on outlets. Each outlet is classified as supermarket, large grocery, small grocery, or mini-market/self-service, based on size. Furthermore, I can identify outlets that

belong to the same chain and the region where the outlets operate. The majority of the chains are local, but international retailers such as Carrefour also operate in Saudi Arabia.

To improve quality of the data I eliminate extreme price movements by dropping observations where the monthly price changes is above +300% or below -75%.⁸ Moreover, in order to ensure that our results are not driven by entry and exit of outlets, I only consider outlets that are present in the sample in all months between January of 2005 and December 2009.⁹ In cases where the entire sample is used, I state it explicitly.

Table 1 presents descriptive statistics for the data. In 2005 550 cheese products (EAN codes) were sold in Saudi Arabia. These products belonged to 68 brands and 28 distributors or manufacturers. Over time the number of products increased, the number of brands dropped slightly, and the number of distributors/manufacturers remained fairly constant.

Table 1 – Descriptive Statistics for the Market of Cheese Products in Saudi Arabia: 2005-2009

Year	Products	Brands	Supplier	Outlets	Chains	Channels	Regions
2005	550	68	28	334	6	4	4
2006	539	60	27	334	6	4	4
2007	670	71	28	334	6	4	4
2008	718	73	28	334	6	4	4
2009	699	63	27	334	6	4	4

IV. Analysis

In 2005, Danish brands sold 68 different cheese products in Saudi Arabia. These products accounted for 12% of all products sold, and 17% of all revenue.¹⁰ At the same time, the market

⁸ These thresholds are recommended by Statistics Netherlands on their work on inflation measures using monthly scanner data (de Hann and van der Grient 2009).

⁹ A new outlet entry in the dataset does not imply that the outlet is newly established. While this may be one reason, another reason may be that Nielsen decided to include it as part of their sampling strategy, or because the company just received permission to audit the outlet. Similarly, an exit could imply that the outlet went out of business, it dropped from the sample that Nielsen chooses to follow, or the management decided to stop sharing information with Nielsen. The dataset covers sales of cheese products across 1952 retail outlets. The number of outlets is reduced to 322 when I restrict the sample to these outlets that existed in all periods. Most of the outlets dropped represent mini-markets and groceries, and account for a very small fraction of total sales.

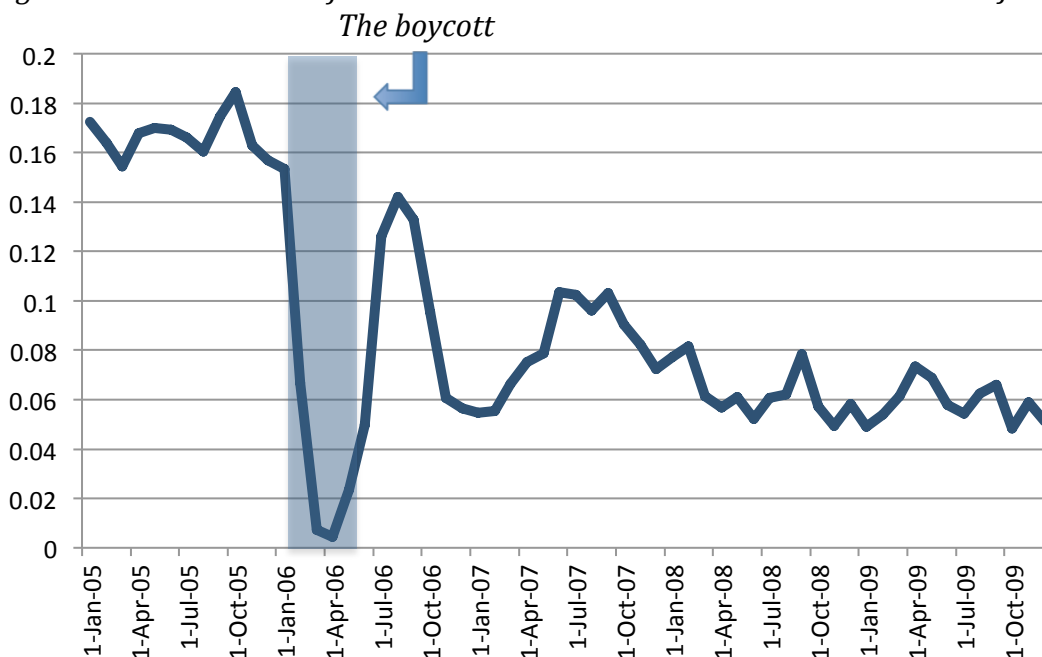
¹⁰ Using a balanced panel of outlets, the Saudi market for cheese products in 2005 was about US \$30 million. Based on data from all the outlets in our sample, and discussions I had with Nielsen, I estimate the total Saudi market for cheese products in 2005 to be closer to US \$100 million and to have doubled in value by 2009.

for cheese products was very concentrated. During 2005-2009, the top 5 brands had a 50% share of all products sold and generated 87% of all revenue. In 2005, a Danish brand was among the top 5.¹¹ Moreover, half the brands were multi-product, in the sense that they sold multiple cheese varieties.

(i) The Boycott:

The call for boycott against Danish products had a devastating impact on Danish brands, both in the short-run and long-run. As Figure 1 shows, the market share of Danish brands in February collapsed to less than 1%.¹² Overnight, the Danish brands went from dominating to vanishing.

Figure 1 –Market Share of Danish Cheese Products in Saudi Arabia between Jan 05 and Dec 09



When the boycott ended in May, there was a partial, but short-lived recovery. For a couple of months after, sales of cheese products rebounded to as much as 14% of the market share, but then started to fall again. The erosion in market share of Danish brands has been continuous, reaching its lowest post-boycott point at the end of our sample. In December 2009, Danish products accounted for just 5% of all sales.

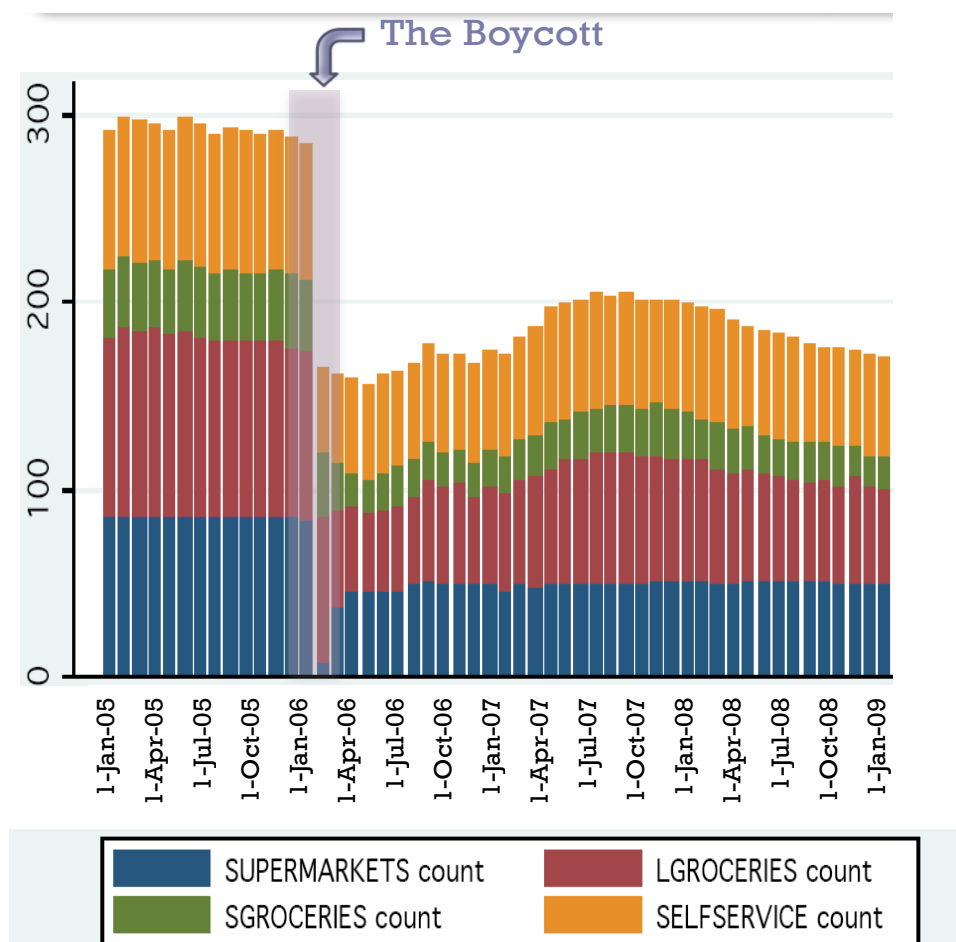
¹¹ A confidentiality agreement with Nielsen prevents us from disclosing the brand names.

¹² This is the only instance where data from all 1852 outlets were used. Since entry and exit of outlets does not bias the computation of market shares, I take advantage of the large, and more representative, sample of outlets. The results do not change if I restrict the data to a balanced panel of the outlets that appear in all periods.

Two factors contributed to the drop in Danish sales after the boycott: changes in market conditions and changes in the distribution of Danish products. The former comes from a shift in preferences against Danish products and in favor of non-Danish (the demand shock) and changes in the product mix (the supply shock). The latter captures the decision of a major supermarket chain not to carry Danish products, even after the boycott ended. This particular chain accounted for about 40% of all supermarkets at that time.

Because the number of outlets carrying Danish products changed over time, I want to know what part of the drop in Danish sales came from changes in the distribution channel and in market conditions. I start by counting each month the number of outlets carrying Danish products between 2005 and 2009. I report the number in *Figure 2* where I also provide a breakdown by outlet type. To be included in the count, the outlet must report positive sales for at least one Danish product within a month.

Figure 2 – Number of Outlets Selling Danish Products



A third of the outlets that carried Danish cheese products before the boycott dropped them during the boycott. Most importantly, almost all the supermarkets, which accounted for the majority of sales, dropped them. However, the outlets did not join the boycott instantaneously. According to interviews I conducted, customer accounts, and press releases from that period, it took about six weeks for retailers to move Danish products off their shelves. This is reflected in the diagram from the collapse in the number of outlets, supermarkets in particular, that carried Danish products between March and April 2006. Interestingly, once the boycott ended, about 40% of the supermarkets decided to keep Danish products off the shelves indefinitely. Most of these outlets belonged to a local chain.

A back-of-the-envelope calculation helps us estimate how much of the drop was due to changes in market conditions or changes in distribution. In each year I break down the market share of Danish brands across the two types of supermarkets; those that re-stocked their selves with Danish products after the boycott ended and those that did not. The shares are reported in *Table 2*. In 2005, Danish brands accounted for 17% of all cheese sales in supermarkets across Saudi Arabia. By 2009, they accounted for only 7%. Sales in stores that dropped Danish goods for good went from 5% in 2005 to 0% each subsequent year (with the exception of positive sales in January 2006). Similarly, sales of Danish products in other supermarkets went from 12% to 7%. Therefore, I conclude that half of the lost market share was due to the choice of some supermarkets to drop Danish goods forever, and half was lost due to changes in consumer preferences and changes in the product mix of non-Danish brands.¹³

¹³ In principle, consumers that could not find Danish products in certain stores could visit other stores. In such case, the analysis above potentially overstates the importance of sales lost to stores that dropped Danish products indefinitely and understates the importance of changes in preferences and product mix. However, because most consumers decide where to go shopping based on store location, product variety and prices, produce quality, and ambience, I do not expect the availability or not of Danish products to be a major factor in their decision making process. So even if such bias exist, I expect it to be small.

Table 2 – Decomposition of Danish Sales by Supermarket Type

year	Market Share of Danish Firms		
	Supermarket Type		
	Total	Dropped Danish Products	Kept Danish Products
2005	17%	5%	12%
2006	9%	1%	8%
2007	8%	0%	8%
2008	6%	0%	6%
2009	7%	0%	7%

(ii) Multi-product brands and intra-brand adjustments:

Next, I turn our attention to intra-brand adjustments. In particular, I study whether the change in the fortunes of Danish and non-Danish brands was a result of a change in sales of existing products, a change in the product mix, or a combination of the two changes. Following Broda and Weinstein (2010), I break down total sales growth between two periods into sales of products that survive and products that are new or disappear. Specifically,

$$(1) \quad \underbrace{\frac{V_t - V_s}{V_s}}_{\text{Total growth}} \equiv \underbrace{\frac{C_t - C_s}{V_s}}_{\text{Common products growth}} - \underbrace{\frac{D_s}{V_s}}_{\text{Destruction}} + \underbrace{\frac{N_t}{V_s}}_{\text{Creation}}$$

where V_t and V_s measure total sales in periods t and s , respectively. C_t and C_s measure total sales in periods t and s of products that are common in both periods. D_s measures total sales of products that existed in period s but disappeared in period t , and N_t measures sales of new products that appear in period t but not in period s . I also define the intensive and extensive margins of growth as:

$$(2) \quad \text{Intensive} = \text{Common Products Growth}$$

$$(3) \quad \text{Extensive} = \text{Creation} - \text{Destruction}$$

The intensive margin accounts for the share of the growth that is driven by growth in sales of products that existed in both periods. The extensive margin accounts for the share of the growth that is driven by the creation of new products, after taking into account losses in sales of products that exit the market.

I first compute the growth in total sales of Danish and non-Danish brands between 2005 and 2006. Then, I decompose the growth into intensive and extensive margins based on the formulas above. I also extend the analysis by looking at two-, three-, and four-year horizons. The results are shown in *Table 3*.

Table 3 – Sales Growth Decomposition into Intensive and Extensive Margin by Brand Type

Year	Growth Rates					
	Total	Danish		Total	Non-Danish	
		Intensive	Extensive		Intensive	Extensive
(i) All Outlets						
2005-2006	-0.43	-0.35	-0.08	0.21	0.05	0.15
2005-2007	-0.47	-0.48	0.02	0.19	-0.06	0.25
2005-2008	-0.54	-0.47	-0.06	0.37	-0.08	0.45
2005-2009	-0.47	-0.41	-0.06	0.46	-0.06	0.52
(ii) Supermarkets that kept Danish products						
2005-2006	-0.22	-0.12	-0.11	0.31	0.17	0.14
2005-2007	-0.26	-0.29	0.04	0.16	-0.05	0.22
2005-2008	-0.34	-0.28	-0.06	0.36	-0.07	0.42
2005-2009	-0.26	-0.23	-0.04	0.49	-0.05	0.54
(iii) Supermarkets that dropped Danish products						
2005-2006				0.09	-0.05	0.13
2005-2007				0.21	-0.06	0.28
2005-2008				0.40	0.05	0.35
2005-2009				0.44	0.07	0.38

Note:

Intensive = Growth in sales of products that are common in both periods: $(C_t - C_s)/C_s$

Extensive = Creation – Destruction: $N_t/V_s - D_s/V_s$

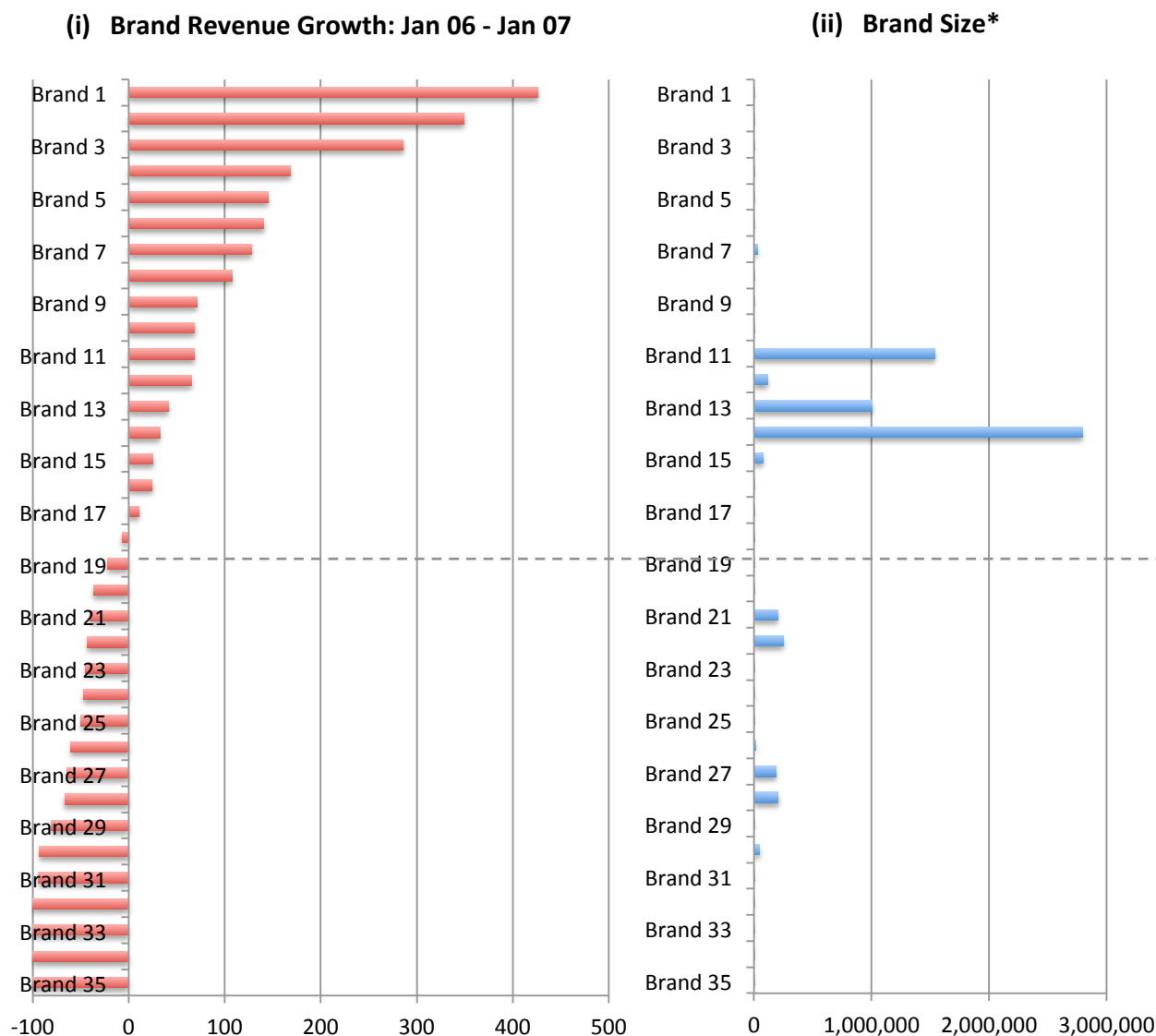
What we observe is that intra-brand adjustments for the brands that experienced a negative (the Danish) and a positive (the non-Danish) demand shock took place at opposite margins. The drop in sales of Danish brands in 2006 is explained almost entirely by the intensive margin, whereas gains by non-Danish brands by the extensive margin. The decomposition suggests that Danish brands continued to sell the same products, but revenue per product dropped as a result of the boycott. In contrast, non-Danish brands expanded their product mix in order to fill the void left by the absence of Danish products and attract new customers. Interestingly, for the non-Danish brands revenue per existing product decreased in all but one year, which suggests that the introduction of new products came at the expense of existing ones. I check robustness

by repeating the analysis separately for the group of supermarkets that re-introduced Danish products and those that did not. As shown in Panels (ii) and (iii), the results do not change.

(iii) Brand Strategies:

An interesting finding is that not all non-Danish brands benefited from the boycott against Danish products. Half of them grew in revenue, and half of them either shrank or disappeared. I illustrate this in *Figure 3* (left panel), where I rank non-Danish brands according to sales growth between January 2006 and January 2007. I also plot the size of each brand pre-boycott (January 2006) on the right panel. Throughout the paper I measure size by brand revenue in January 2006, the month before the boycott took effect.

Figure 3 –Brand Revenue Growth and Brand Size

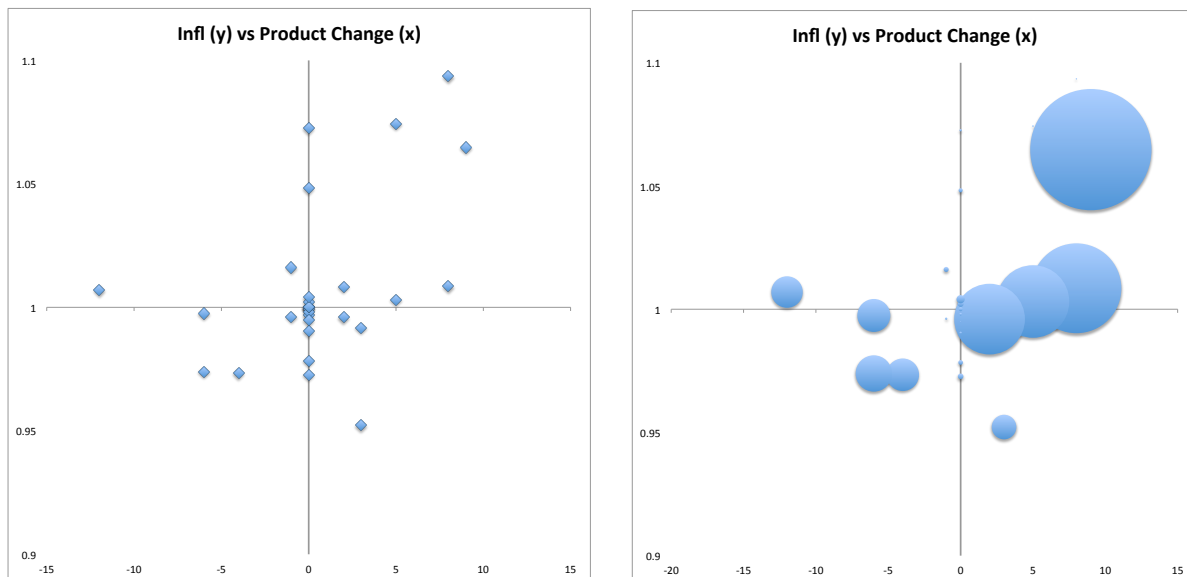


* Based on brand revenue in January 2006 (in Saudi Riyals)

As the figure reveals, the post-boycott experience of the brands varied substantially. Moreover, their performances were not related to brand size. The three brands that accounted for most of sales experienced moderate sales growth, but the biggest winners and losers were all small brands by market size. What could account for this?

I attribute the difference in the performance of brands to differences in the strategy they pursued in response to the boycott. In particular, I find that these brands reacted mainly by changing the number of products they offered and by changing prices of existing ones.¹⁴ This is captured in Figure 4. On the horizontal axis I measure the percentage change in the number of products offered by each brand between January 2006 and January 2007. On the vertical axis I measure the percentage price change in the basket of products that each brand sold in both periods. Each point on the figure identifies a brand. On the right panel, I repeat the analysis but this time I use the size of the circle to proxy for the size of each brand based on January 2006 sales. We see that the non-Danish brands responded in a variety of strategies. The top-3 brands responded to the boycott by raising prices of existing products and by adding new products in the market. But the other, smaller, brands had a very heterogeneous response.

Figure 4 – Brand Strategies: Changes in Products and Prices



Each circle represents a brand. On the right diagram, the size of each brand (as measured by revenue in January 2006) is reflected by the size of the circle.

¹⁴ I also looked at promotions, but I found that in all but the top firms, promotions were seldom used before, during, or after the boycott.

Well-known brands have a relatively inelastic demand compared to fringe brands. Therefore, we may suspect that raising prices in response to the boycott may have worked for the well-known brand but not for fringe brands. Similarly, intensification of the competition due to the introduction of new products may have had a very different impact on well-known versus fringe brands.

Because I have access to sales of each brand across hundreds of outlets I can test this hypothesis by estimating the following econometric model for the non-Danish brands:

$$\begin{aligned}
 \Delta \ln(\text{Market Share})_{ijr} = & a_0 + a_1 \Delta \ln(\text{Price})_{ijr} + a_2 \Delta \ln(\text{Price})_{ijr} * \text{DURING} + a_3 \Delta \ln(\text{Price})_{ijr} * \text{AFTER} \\
 (2) \quad & + a_4 \Delta \ln(\text{COMP})_{ijr} + a_5 \Delta \ln(\text{COMP})_{ijr} * \text{DURING} + a_6 \Delta \ln(\text{COMP})_{ijr} * \text{AFTER} \\
 & + a_7 \text{DURING} + a_8 \text{AFTER} + \varepsilon_{ij}
 \end{aligned}$$

I compute the market share of each brand i in outlet j during regime r and regress it on brand prices and the number of competing cheese products per store. All variables, except dummy variables, are in log levels. I consider three four-month long regimes: before the boycott (October 2005 to Jan 2006), during (Feb 2006 to May 2006) and after (June 2006 to Sep 2006). *DURING* and *AFTER* are dummy variables that take the value of 1 if the observation comes from the period before and after the boycott, respectively. I measure brand prices by dividing total dollar sales per period with total volume.¹⁵ I estimate specification (2) separately for the fringe brands and for the well-known brands.

The regression results of specification (2), presented in *Table 4* find support for the hypothesis above.¹⁶ Raising prices during and after the boycott was beneficial for the well-known brands but not for the fringe brands. This can be seen by adding up the coefficients of $\ln(\text{PRICE})$ and

¹⁵ Volume=Unit Sales *Weight. An alternative measure of prices is to create a brand-outlet specific price index that considers only products that are common in consecutive periods. However, because such calculation does not consider how the price of newly introduced products differs from prices of products that are already available or have exited the market it misses very important information.

¹⁶ In the baseline specification I only consider outlets that existed in all periods between January 2005 and December 2009 that have re-introduced Danish products after the boycott ended in May 2006. This restriction results in 107 outlets. However, the results do not change if I consider only supermarkets, outlets that dropped Danish goods indefinitely, outlets that existed between October 2005 and Sep 2006, or any combination of these various restrictions. The results are available upon request.

$\ln(PRICE)*DURING$ or $\ln(PRICE)*AFTER$. In the case of fringe brands, the sum of the coefficients is -0.476 and -0.464, respectively, whereas for the well-known brands the corresponding coefficients are 0.282 and 0.363. Similarly, competition hurt the fringe brands, but benefited the well-known brands.

Table 4 – Brand Market Share, Prices, and Competition

Y= $\ln(\text{Market Share})$	Well-Known Brand?	
	NO	YES
PERIOD: DURING	0.534 (0.379)	0.304 (0.191)
PERIOD: AFTER	0.584 (0.370)	0.533*** (0.202)
$\ln(PRICE)$	-0.381*** (0.0431)	0.428*** (0.0396)
$\ln(PRICE)*DURING$	-0.0951 (0.0640)	-0.146*** (0.0540)
$\ln(PRICE)*AFTER$	-0.0828 (0.0633)	-0.0653 (0.0476)
$\ln(COMPETITION)$	-0.626*** (0.0542)	0.225*** (0.0342)
$\ln(COMPETITION)*DURING$	-0.0806 (0.0781)	-0.0533 (0.0432)
$\ln(COMPETITION)*AFTER$	-0.114 (0.0759)	-0.117** (0.0460)
Constant	-0.583** (0.265)	-2.754*** (0.151)
Observations	3,155	1,040
R-squared	0.173	0.326

Note: Robust standards errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

V. Conclusion

The boycott against Danish products in Saudi Arabia in 2006 had a devastating impact on sales of Danish cheese products in the country. Market share of Danish firms dropped from 17% the month before to less than 1% the month after and has never recovered since. By the end of 2009, and four years after the boycott was called off, Danish firms only account for 5% of all cheese sales in Saudi Arabia.

In this paper I use monthly scanner data on sales of cheese products across hundreds of retail outlets in Saudi Arabia to document the impact of the boycott. In contrast to past work on boycotts, I find that the boycott had a strong impact, both in the short run and the long run.

Because I have access to highly disaggregated data on sales of cheese products at *each* store, because the boycott did matter, and because the start date and end date of the boycott are well defined, I am able to then explore how Danish and non-Danish firms changed prices and their product mix in response to the boycott. Our results bring to light several asymmetries. Firstly, Danish firms kept the same number of products, whereas non-Danish firms responded by introducing new products. Secondly, half of the non-Danish brands benefited but the other half did not. Thirdly, the handful of well-known brands that accounted for the majority of sales benefited from raising their prices but also from the increased competition that resulted from the introduction of new products. In contrast, the increased competition hurt sales of fringe brands, especially those that raised prices in response to the boycott.

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Appendix A – A Timeline of the 2006 Boycott Against Danish Products

