

# Consumers' Activism: the Facebook boycott of Cottage Cheese

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# Introduction

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- Social media seem to play important role facilitating political mobilization:
  - Protests in Bulgaria, Turkey, Brazil, Iran and Bosnia
  - Uprisings in Egypt and Tunisia in 2011
  
- Some commentators (Taylor, CNN 2011, and Mainwaring, Forbes 2011) argued social media may enable consumer mobilization:
  - Disciplining firms: to lower prices or act socially responsible
  - Buyers' countervailing power
  - Bank of America, SunTrust and Wells Fargo, debit fees 2011
  
- Boycotts
  - Numerous objectives: environmental, political, animal rights
  - Proxy vs. non-proxy boycotts
  - We look at a non-proxy, with direct economic goal (lower prices)

# The cottage boycott

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- Cottage cheese is a staple food in Israel
- Price was under government price control until July 2006
- By May 2011, price increased 43% (since deregulation)
- On June 14, 2011, a Facebook event created, calling for a boycott of cottage cheese starting July 1 until price drops from about 7 NIS (per 250 grams container) to 5 NIS (1 US\$=3.88NIS then)
  - Trigger: event follows press coverage of items produced in Israel sold cheaper in the US
- Immediate impact on prices
- We look at
  - the evolution of prices and quantities, who/when reacted
  - assess impact on demand
  - role of social media

# The cottage boycott

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- What we study:
  - How the boycott worked
    - Consumer behavior
    - Firms' reactions
  - Why it worked
    - Channels, how costly to firms, fear of spread to other products
  - What was the role of social networks
- Social media seems crucial for boycott
  - There was no organized interest group behind the protest
  - Requires creating outrage (prices abroad)

# The cottage boycott

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- We estimate demand to
  - Compute counterfactual sales during the boycott
  - Demand at start of boycott declined 30% (short lived)
  
- Lasting impact: higher demand elasticities
  
- Implications:
  - Antitrust
  - Firm strategy (this is not a “proxy boycott”)
  - Political Economy of Boycotts (Diermeier, 2011, 2012)

# Related Literature

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## □ Economics:

- Bentzen and Smith (2002) and Chavis and Leslie (2009): French wine
- Hong et al. (2011) French cars in China
- Clerides, Davis, and Michis (2013): US soft drinks in Arab countries during the Iraq war
- Fershtman and Gandal (1998) cars (sellers) in Israel
- Barrage, Chyn, and Hastings (2014) Impact of green advertising on BP
  - Non-Proxy
  - Only non-proxy boycotts have implications on firm strategy

## □ Finance:

- Stock Market Reactions to Boycotts: Friedman (1985), Pruitt and Friedman (1986), Pruitt Wei, and White (1988), and Davidson, Worrell, and El-Jelly (1995), Koku, Akhigbe, and Springer (1997), Teoh, Welch, and Wazzan (1999), Epstein and Schnietz (2002)

## □ Political Economy of Boycotts

- Diermeier (2011, 2012)

## □ Effect of the Internet on political outcomes

- Miner (2012), Czernich (2012), Falck, Gold, and Heblich (2013) and Campante, Durante, and Sobbrío (2013)

# Background

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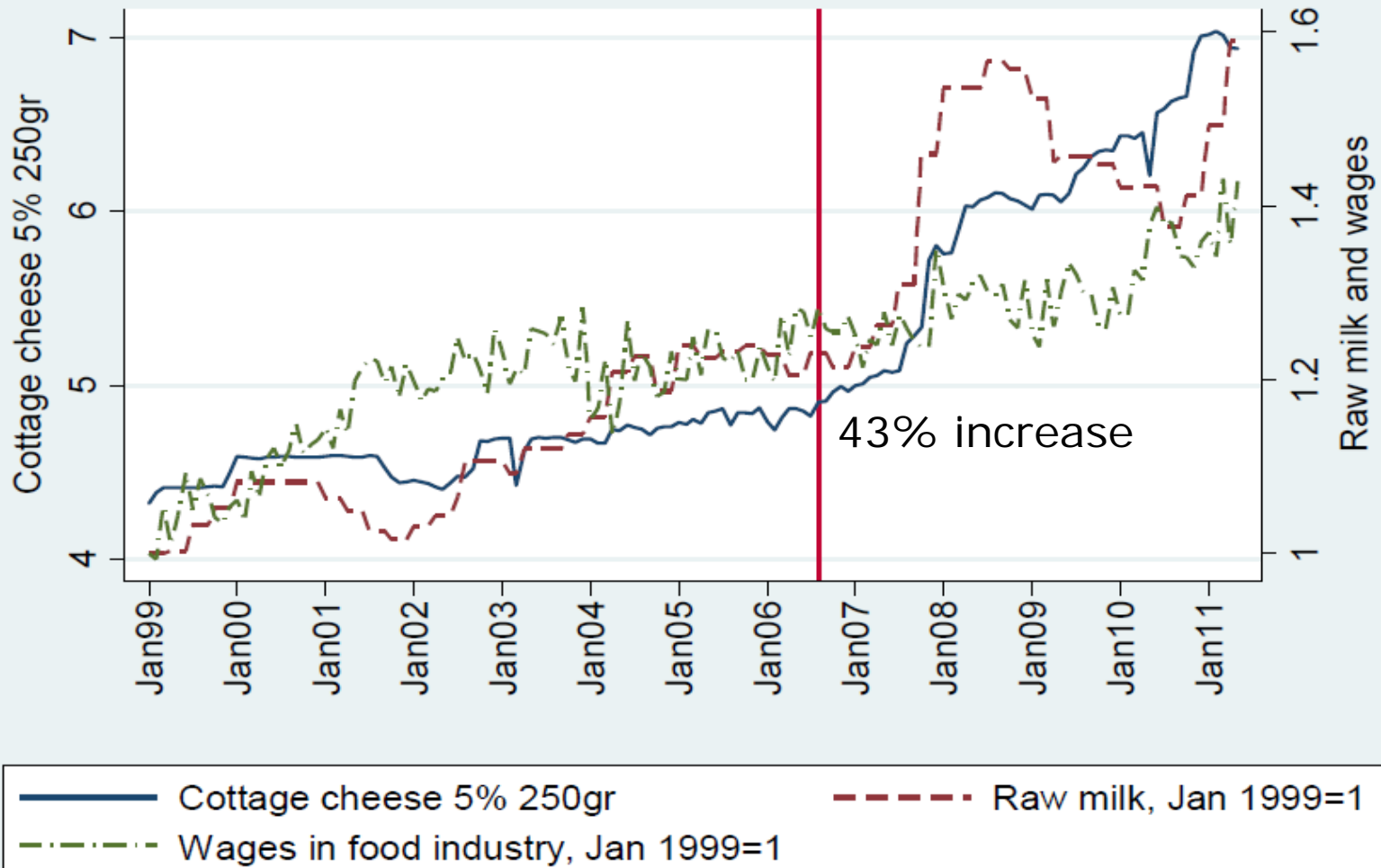
# Cottage cheese

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- Variety of cottage, but 80% of sales are plain 5% in 250 grams container
  
- Market shares at the end of 2013
  - Tnuva: 71.9%
  - Tara: 14.5%
  - Strauss: 12.9%
  
- All three are food conglomerates



# The evolution of cottage price



Vertical line marks price cap removal on July 30, 2006

# The boycott events

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- May 31, 2011: news articles describe surge of food prices in Israel
  - Until today foreign comparison attract attention on-line and on tv
  
- June 14: the Facebook event created:
  - 30K join on June 14
  - 70K by June 16
  - 105K by June 30
  
- June 14: Hard discount chains announce special deals for a few days
  - loss leader?
  
- June 16: the organizers announce that the boycott starts immediately
  
- June 24: Tnuva's board chair announces on TV interview that Tnuva will not unilaterally lower prices. Following interview, three new groups form on Facebook calling to boycott all Tnuva products
  
- End of June: Tnuva lowers wholesale price to 4.55 NIS, and soon after, Strauss and Tara followed.
  - Price Reduction does not meet the boycotters' demands

# The boycott events

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- June 27: Government appoints committee to review competition and prices in food and consumption markets
  
- Mid July: Committee recommends reforms in dairy market
  
- July: "tents protest" organized on Facebook; thousands of protestors set up tents in Tel Aviv to protest rising cost of living and demanding social justice
  
- September: The student associations of 12 colleges and universities announce their intention to boycott Tnuva until lowers prices
  
- September 25: The antitrust authority raids Tnuva's offices
  - Seizes 2008 McKinsey report advising Tnuva to raise prices by at least 15% since demand for cheese is inelastic
  
- October 2: Chairmain resigns from Tnuva's board
  - Tnuva announced a price cut of up to 15% of dozens of products

# Data

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# Data

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- Scanner (register) data covering virtually all large supermarkets and many minimarkets and groceries
- Daily transactions of the cottage and white cheese in 2,169 stores throughout the country, over the period January 1, 2010 - April 30, 2012
- We restrict attention to most popular configurations: 250 grams, plain cottage and white cheese, with 3% and 5% fat content
- We thus have 6 items (cottage cheese and white cheese by three manufacturers) sold in 2,135 stores

# The distribution of stores

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Store format	Frequency	Percent	Percent of sales
Convenience Stores	54	5	0.3
Grocery stores	84	7	0.8
Minimarkets	320	28	8.9
Main local supermarkets	290	26	28.6
Main HD supermarkets	227	20	36.6
Other HD supermarkets	152	13	24.9
Total	1,127	100	100

# Anatomy of the boycott

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# Price reaction to the boycott



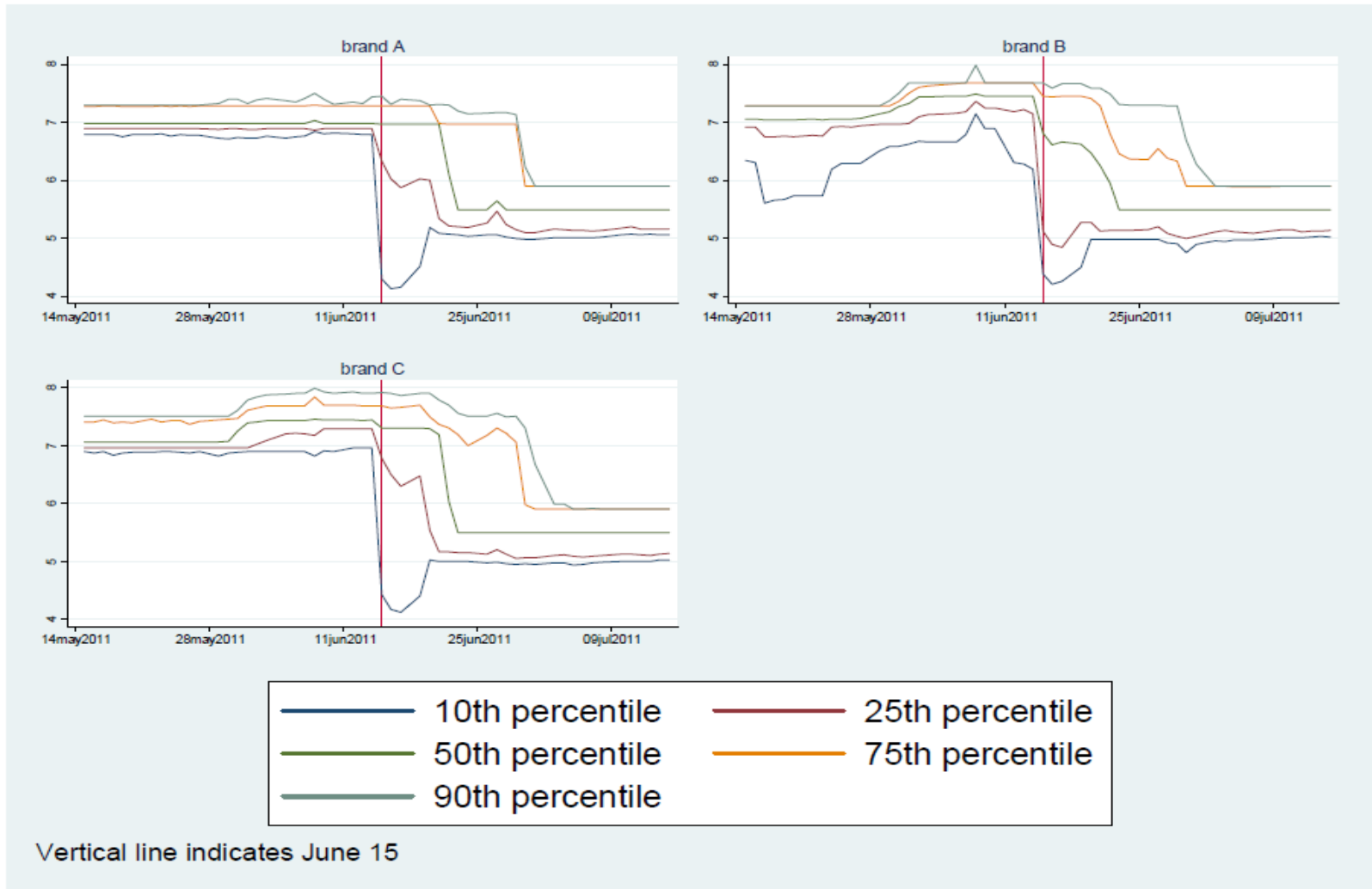


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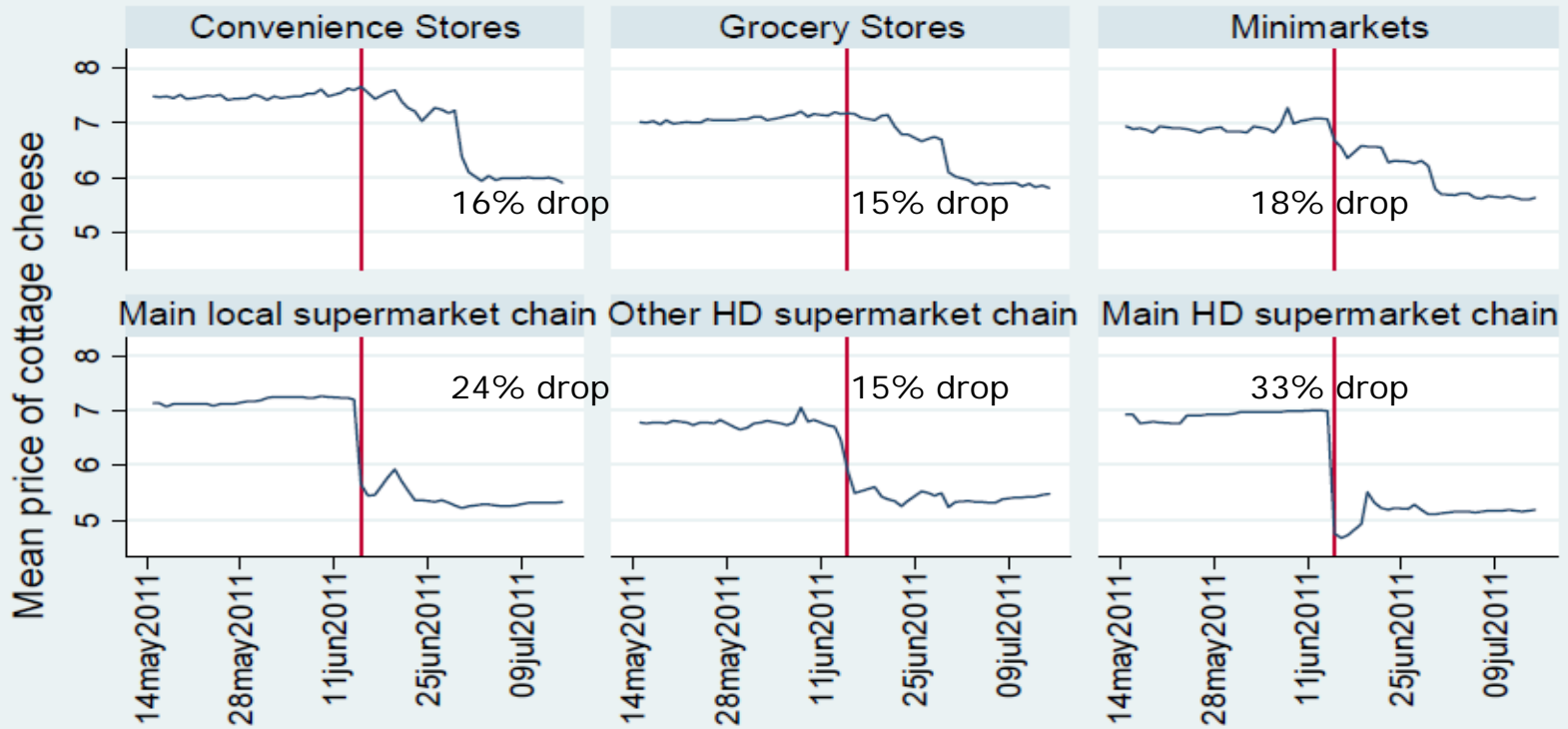
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- Immediate price concession
  - Lower than demanded by boycotters
  - Lasting impact, even today the price is below 6 NIS
  
- Similar prices across brands before, similar prices after
- Despite different shares, and elasticities (as we see later)
  
- Still enough variation over time (which does not appear seasonal or brand related) to enable demand estimation
  
- Lets look closer at evolution of prices:
  - by format, and variance over time
  - for hints of what happened

# Distribution of prices



# Prices by store format

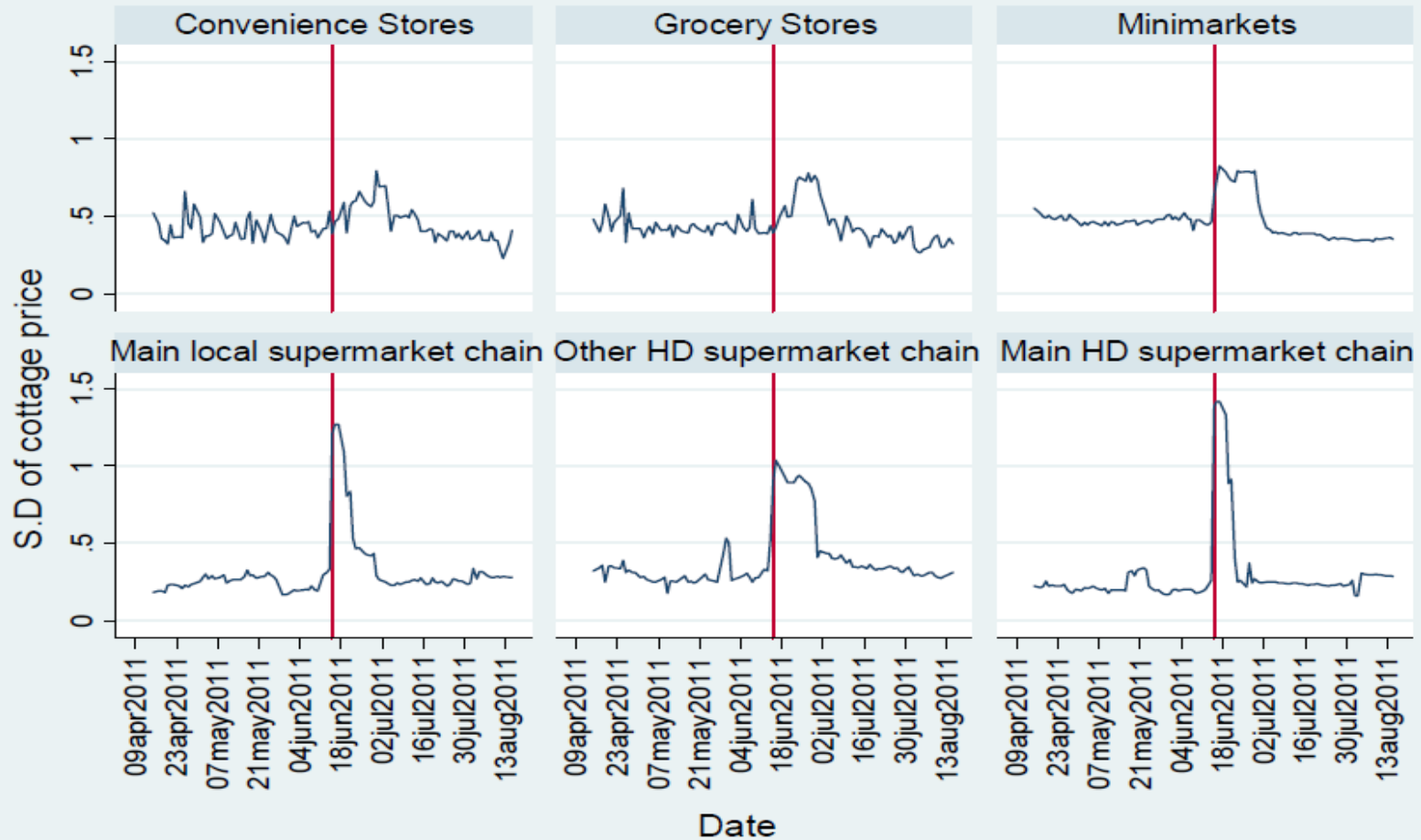


— Mean price of cottage cheese

vertical line indicates June 15

quantity-weighted mean prices across stores and brands

# S.D. of prices



Vertical line indicates June 15, 2011

# Who initiated the price cuts?

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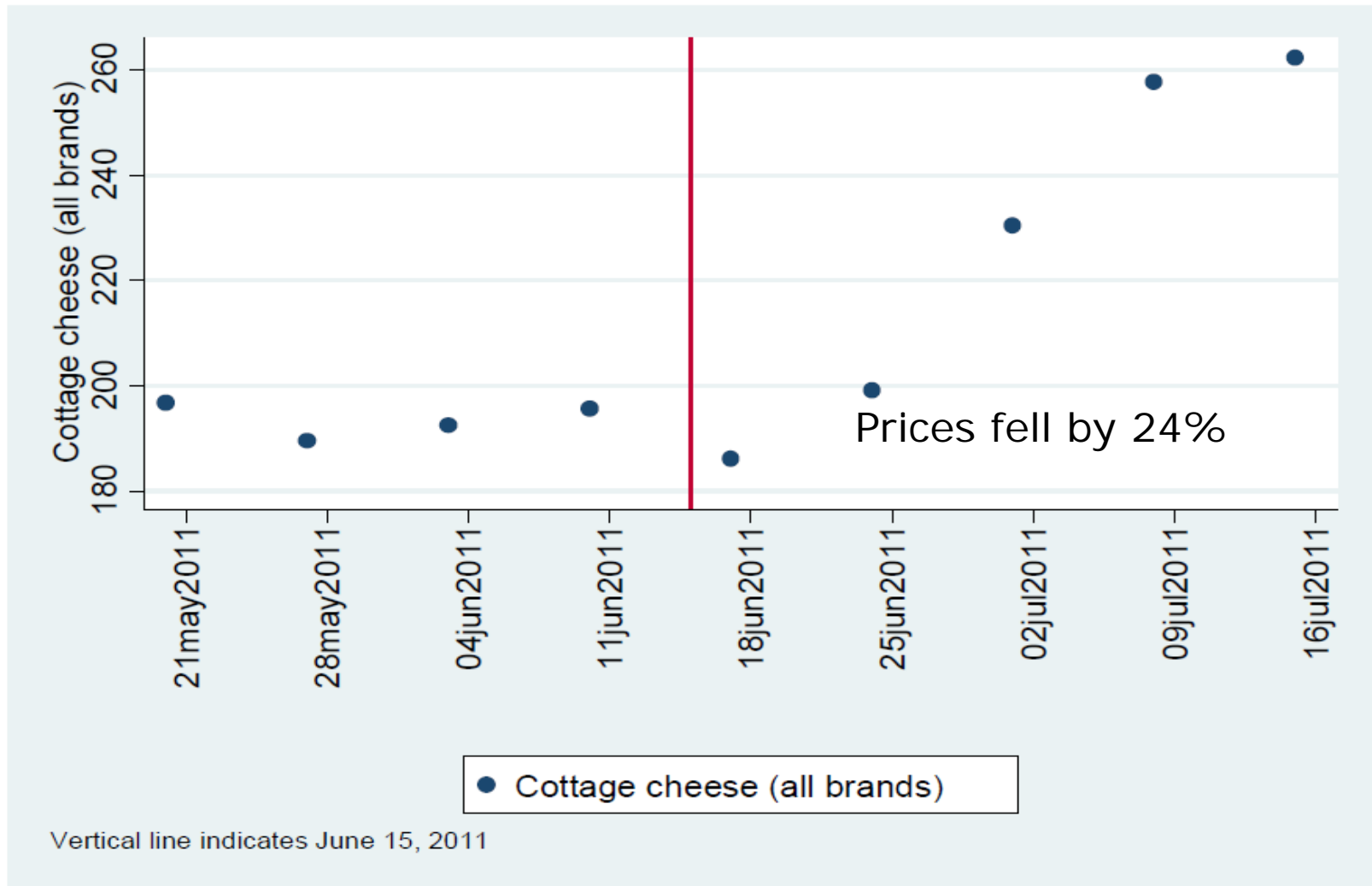
- The swift price decline is probably due to retailers rather than manufacturers:
  - Steep increase in price dispersion after the boycott
  - Similar price declines across brands within a store
  
- Large chains offered temporary sales in light of the attention garnered by the product category
  - Sort of loss-leader
  
- Tnuva, largest manufacturer, publicly announced no price concessions

# Consumers' reaction to the boycott

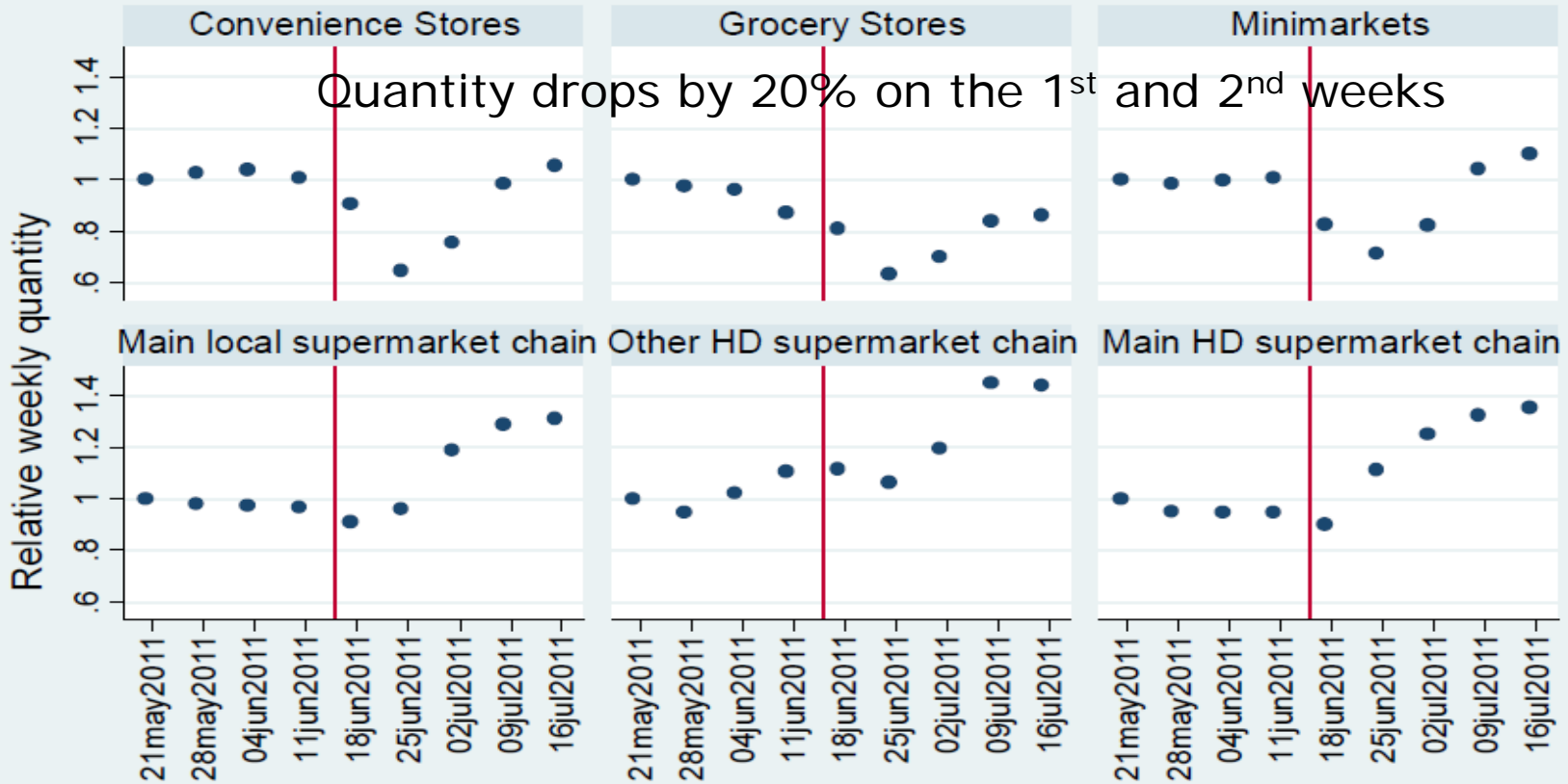
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- How can the boycott harm firms:
  - immediate loss of sales (including other products)
  - risk government decides to re-regulate prices
  - risk of other government intervention: opening for imports
  - risk of class action on grounds that prices are excessive (relevant for Tnuva which was declared monopoly in "milk and milk products" market by Antitrust Authority in 1989)
  
- We focus on the immediate loss of revenue, we cannot quantify the other risks

# Weekly total quantity



# Quantity relative to May 15, 2011

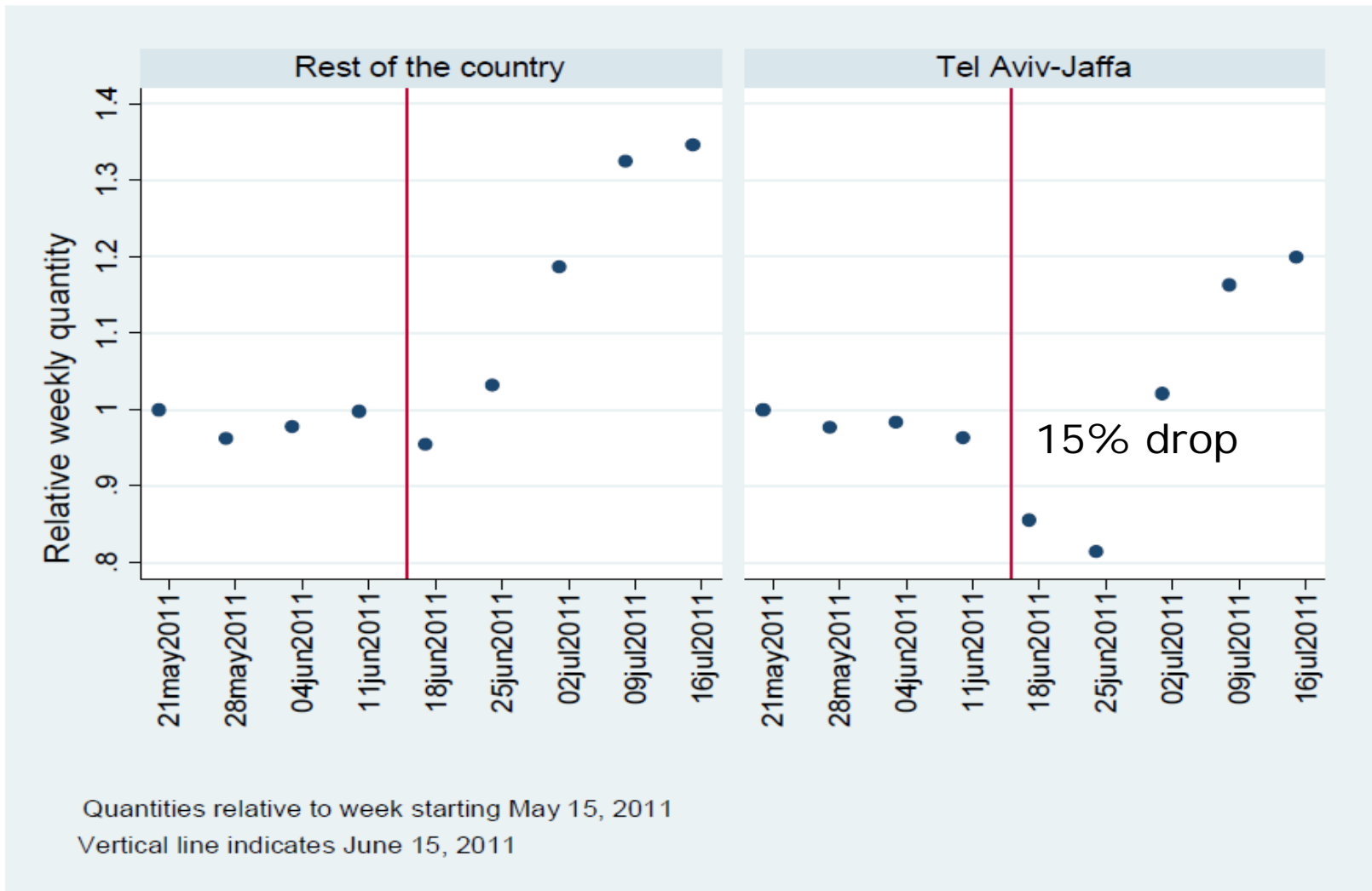


Quantities relative to week starting May 15, 2011

Vertical line indicates June 15, 2011



# Tel Aviv vs. the rest of the country



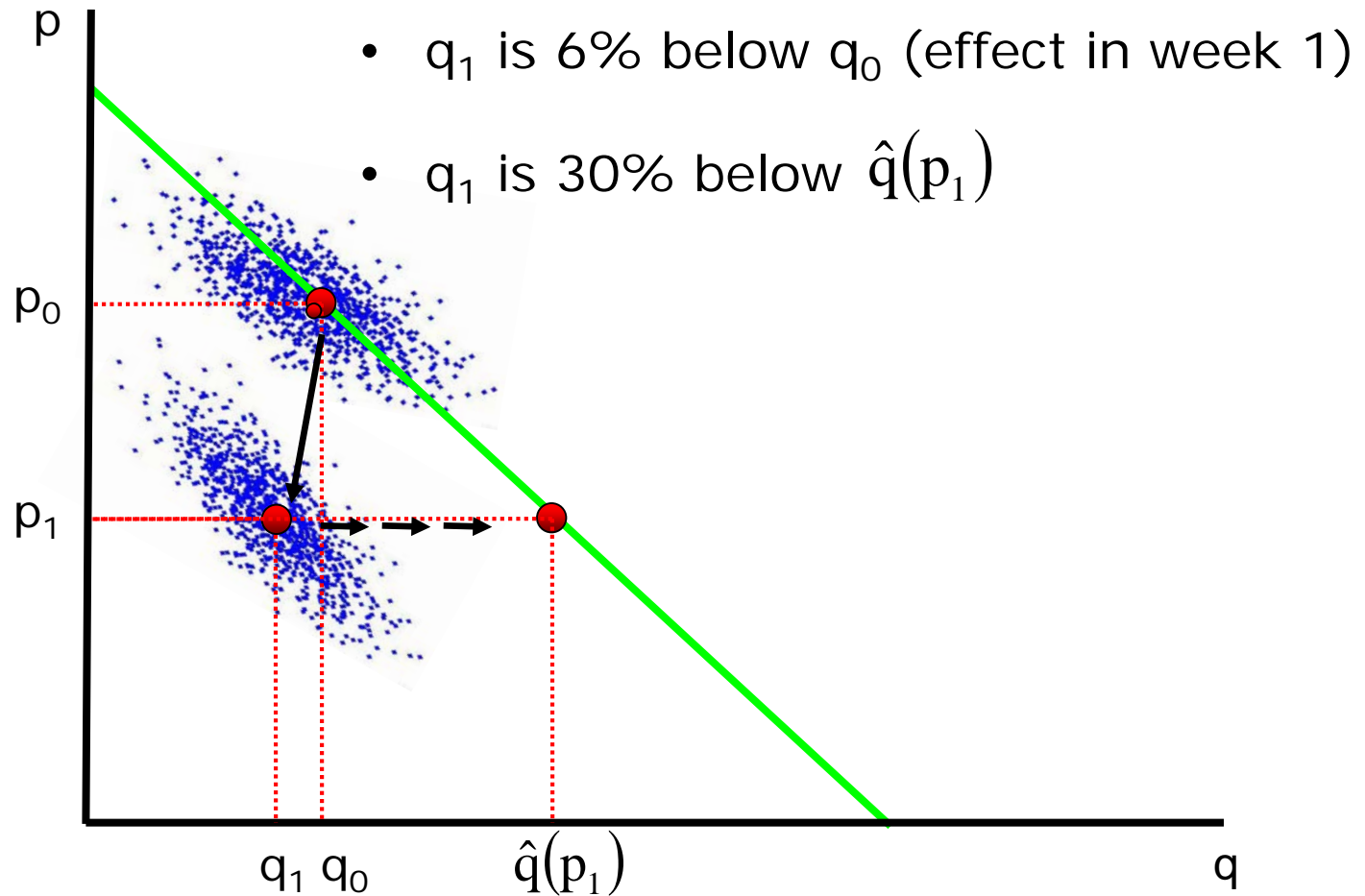
# Boycott impact-on-demand

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- We observe a decline in quantity sold (small and non-lasting) which confounds the response to price reduction
  
- How large was the boycott effect demand?
  
- “But for” boycott calculation
  - Estimate pre-boycott demand
  - Plug boycott prices, to get “but for” predicted sales
  - Compute a boycott intensity index (BI): ratio of observed sales over the counterfactual quantity

# The boycott effect

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# Boycott impact-on-demand

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- We estimate the following demand function:

$$\ln(q_{jst}) = \alpha_{sj} - \beta_j \ln(p_{jt}) + \sum_k \gamma_{jk} \ln(p_{kt}) + x_t \delta + \varepsilon_{jst}, \quad j=1, \dots, 6, \quad k \neq j$$

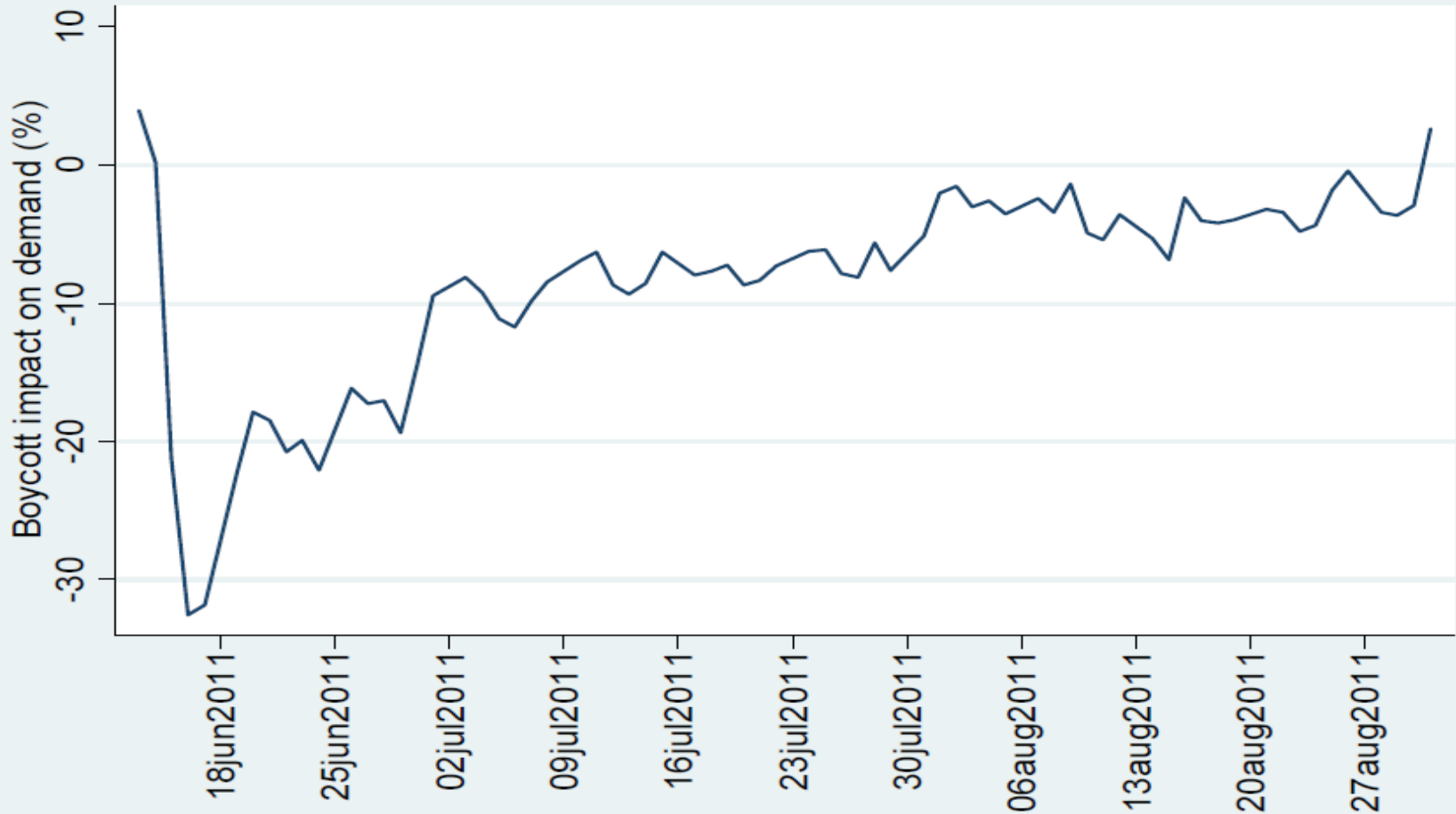
- Using the pre-boycott estimates, to compute:

$$BI(p_t) = 100 \times \left( \frac{q_t}{\hat{q}_0(p_t)} - 1 \right)$$

- $BI(p_t)$  is gap between observed and predicted sales
  - For example  $BI(t)=0.9$  means sales are 10% below expectations due to the boycott

# The BI index (all brands)

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# What did the boycott do?

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- Impact on demand, only temporary
  - Reputation effects did not last
  
- Did it have other lasting effects (beyond the temporary demand reduction)?
  - For example increasing awareness about prices, product substitutes, perhaps leading to more intense search
  
- We estimate demand post boycott (leaving the boycott period out of the sample)
  - We then compare demand before and after

# Price elasticities before and after

	A	B	C
A before	-1.56***	0.51 ***	0.14
A after	-1.69 ***	2.05 ***	1.77 ***
B before	0.11 ***	-3.63 ***	0.11 **
B after	0.69 ***	-4.70 ***	0.60 ***
C before	0.03	0.24 ***	-4.3 ***
C after	0.47 ***	0.81 ***	-5.07 ***
Obs.	431,954	431,954	431,954
R <sup>2</sup>	0.88	0.74	0.72

- Before = before May 15, 2011
- After = after October 2, 2011
- The post-boycott elasticities are higher, especially cross elasticities (5 times higher on average)
- The before-after differences are sig. except in the case of A's own price elasticity
- We tried substitution to white cheese (closest product), nothing systematic

# Social networks

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# Social media

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- Unlike other consumer boycotts, the cottage boycott did not have organized backing ⇒ Social media was essential for
  - coordinating action
  - getting the message across
  - alleviating the commons problem (no point in joining unless many others join to make the boycott effective)
  
- We use demographic data from the 2008 Israel Census of Population conducted by the Central Bureau of Statistics
  
- The data corresponds to each store statistical area store (small, homogenous, geographical area with population between 2,000 and 5,000)
  
- Demographics likely correlated with access to social media

# Who participated?

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- The average BI index for store  $s$ , June 15-August 31:

$$BI_s = \frac{1}{T} \sum 100 \times \left( \frac{q_t}{\hat{q}_0(p_t)} - 1 \right)$$

- Regressing  $BI_s$  on each demographic variable:

	$BI_s$	Obs.
Households with PC	-0.3623***	882
Households with Internet	-0.3596***	882
B.A. degree	-0.6575***	838
Mobile phones per household	-7.9951***	882
% in "yeshiva" (relig. school)	0.1953***	817
% of those aged 65+	-0.0067	886

- $BI_s$  more negative for more exposure to social media

# Who was influenced?

	Percentage of households using a PC			Percentage of population with bachelor's degree		
	Own-price elasticity A			Own-price elasticity A		
	Before boycott	After boycott	After - Before	Before boycott	After boycott	After - Before
Below median	-1.855 <sup>***</sup>	-1.923 <sup>***</sup>	-0.068	-1.928 <sup>***</sup>	-2.072 <sup>***</sup>	-0.144
Above median	-1.174 <sup>***</sup>	-1.376 <sup>***</sup>	-0.202 <sup>***</sup>	-1.211 <sup>***</sup>	-1.266 <sup>***</sup>	-0.055
Above - Below	0.681 <sup>***</sup>	0.547	-0.134	0.717 <sup>***</sup>	0.806 <sup>***</sup>	0.089
	Own-price elasticity B			Own-price elasticity B		
Below median	-4.067 <sup>***</sup>	-5.128 <sup>***</sup>	-1.061 <sup>***</sup>	-4.129 <sup>***</sup>	-5.047 <sup>***</sup>	-0.918 <sup>***</sup>
Above median	-3.144 <sup>***</sup>	-4.246 <sup>***</sup>	-1.102 <sup>***</sup>	-3.112	-4.445 <sup>***</sup>	-1.333 <sup>***</sup>
Above - Below	0.923 <sup>***</sup>	0.882 <sup>***</sup>	-0.041	1.017 <sup>***</sup>	0.602 <sup>***</sup>	-0.415 <sup>**</sup>
	Own-price elasticity C			Own-price elasticity C		
Below median	-4.886 <sup>***</sup>	-5.343 <sup>***</sup>	-0.457 <sup>**</sup>	-4.887 <sup>***</sup>	-5.419 <sup>***</sup>	-0.532 <sup>**</sup>
Above median	-3.453 <sup>***</sup>	-4.784 <sup>***</sup>	-1.331 <sup>***</sup>	-3.503	-4.812 <sup>***</sup>	-1.309 <sup>***</sup>
Above - Below	1.433 <sup>***</sup>	0.559 <sup>***</sup>	-0.874 <sup>***</sup>	1.384 <sup>***</sup>	0.607 <sup>***</sup>	-0.777 <sup>***</sup>

Standard errors clustered at the store level. \*p<0.10; \*\* p<0.05; \*\*\* p<0.01

# Above – below effect

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# Before – after effect

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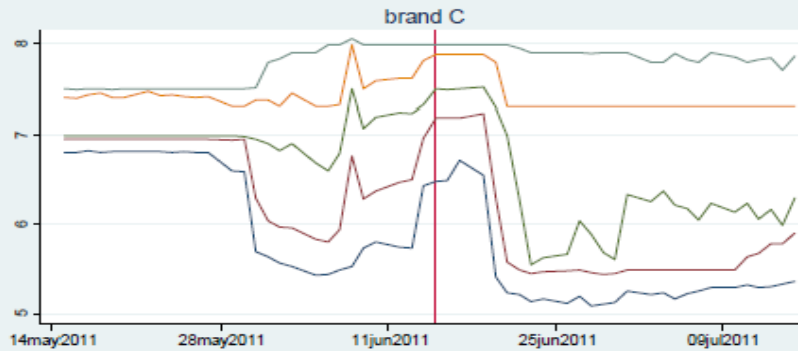
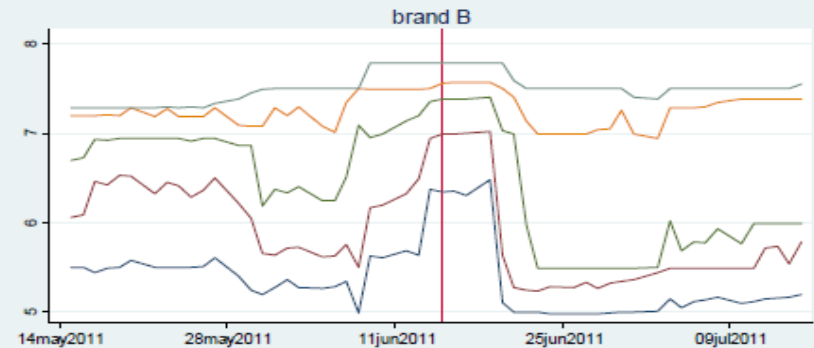
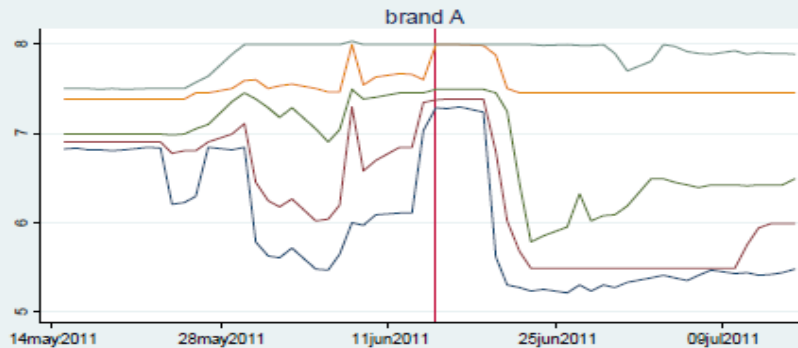
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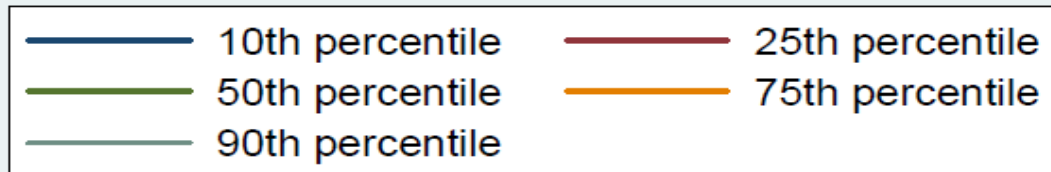
# Firm's Incentives

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# Did firms fear spillovers?



Prices decrease only after boycotters demand price reductions in white cheese



Vertical line indicates June 15



# Decomposing the price decline

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- Why did prices decline following the boycott?
  - Higher elasticities, perhaps due to increased price awareness
  - Firms' fear of consumer's reactions, intervention by policymakers, or class actions

- FOCs imply that  $p = \eta/(\eta-1) \times c \Rightarrow c = (\eta-1)p/\eta$

- If cost did not change, then post boycott price should be

$$p' = \frac{\eta'}{\eta'-1} \times c = \frac{\eta'}{\eta'-1} \times \frac{(\eta-1)p}{\eta}$$

- Using estimates, before and after, we find brand B's price should have dropped by only 8% and C's by 5%, due to elasticity changes
  - A's own price elasticity did not change much
  - B and C also seem to have reacted to other considerations

# Epilogue

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- Price of cottage cheese remains below 7NIS until today
- Tnuva's Chief Marketing Officer on January 2013: "The cottage cheese crisis taught us a lesson of modesty and humility"
- Tnuva's CEO on July 2013: "The cottage protests caused Tnuva to emphasize the opinion of the consumer and his needs. Part of this policy is putting cottage under self-regulation"
- On August 25, 2013, the ministry of announced intention to re-regulate white cheese due to "exceptional profitability." But found no need to re-regulate price of cottage cheese because it did not find "unreasonable profitability as in the past."
- ...however ministry will continue to monitor profitability and possibly re-regulation if profitability becomes "unreasonable"

# Conclusions

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- ❑ Firms reacted swiftly but no further concessions
- ❑ Boycott led to higher demand elasticities, especially cross price elasticities (on average increased fivefold)
- ❑ Prices dropped more than focs/elasticities predict
- ❑ Estimates raise question about use of FOC for pricing
  - Long term consequences not incorporated into focs (as consultants didn't consider)
  - Analysis may miss the mark if firms do consider LT effects
- ❑ Social media proxies associated with larger demand decline and increases in demand elasticities
- ❑ ~~Self Regulation due to consumer activism?~~