Nutrition and Competition

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An Economic Perspective on Nutrition

- Growing obesity and diet related diseases in many countries motivate policy interventions
- Economic research develops normative analysis of why interventions may be necessary and positive analysis of counterfactual effects of such policies
- But competition and health objectives may differ:
  - Competition Policy: pressure to offer the best possible range of goods at the best possible prices for consumers
  - Public/Health Policy: to improve healthy food choices

Motivation: Diet Related Diseases

- Worldwide obesity has near tripled since 1975 with 39% adults overweight and 13% obese (WHO 2016)
- Differences in nutritional intakes mirrored in number of health outcomes. For example across countries:
  - Obesity rates: France 14%, UK 23%, US 30%
  - Heart disease of men 65+: France 28%, UK 32%, US 36%
  - Diabetes prevalence: France 13%, UK 12%, US 21%
- Increased interest in which policy interventions can change eating habits or behavior

Economic Rationale for Intervention

- Why should we intervene?
  - Externalities: some costs of excess consumption fall on others (increased health care costs, ..)
  - Internalities: some costs on oneself in the future are not fully accounted for (impatience, lack of information, child development, ..)
- Public policy can potentially improve welfare by helping people make better choices

Which Types of Interventions

- Commonly discussed interventions:
  - Taxes on specific goods such as sugary soft drinks
  - Conditional transfers in cash or in kind
  - Regulation of location of fast food outlets
  - Labelling of food products
  - Information Campaigns, Education
  - Advertising restrictions on junk food
  - Mandatory or self-regulation of products reformulations

Economic Research Perspective

- Economic research can:
  - Explain differences in food consumption, nutrition, obesity across regions, countries, people, time
  - Measure costs (direct, indirect)
  - Model both consumers and firms behavior
  - Propose policies, propose the "best" policies
- Perform ex ante policy evaluations to provide policy recommendation or ex post to learn lessons
- Evaluate the effectiveness of the different policy tools considered on **demand** *and* **supply**

Economic Research Perspective

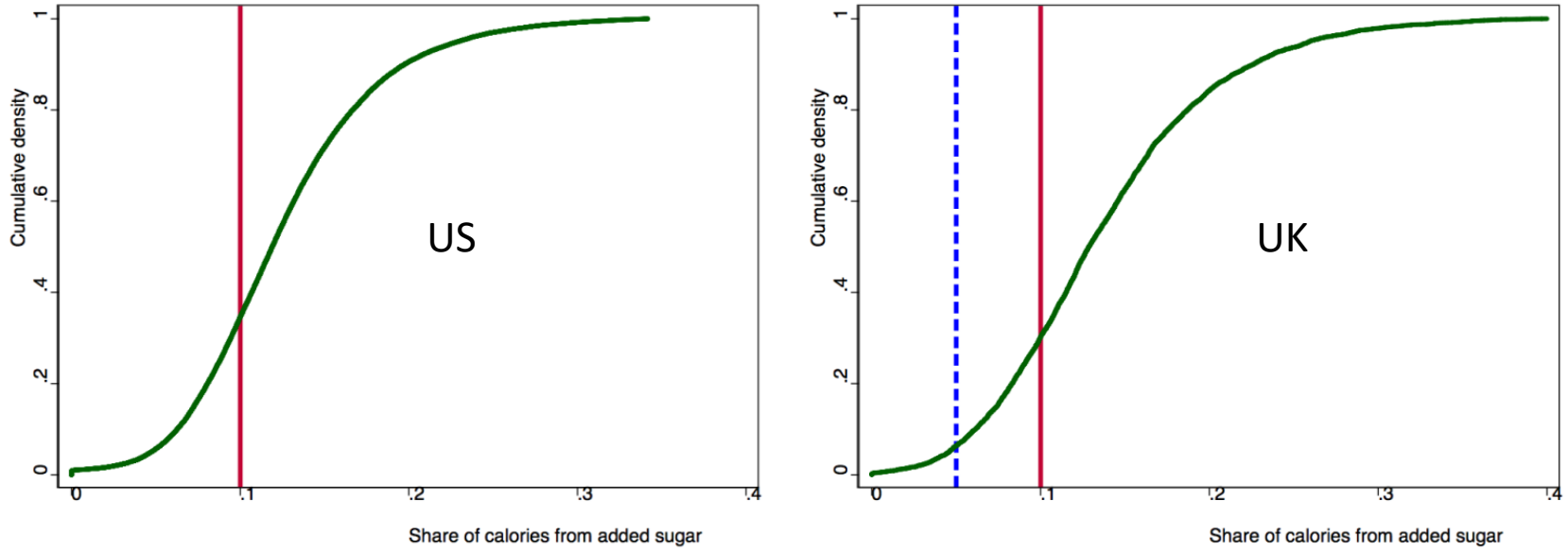
- Example of considered policies:
  - Soda taxes
  - Regulation of advertising
- Need to take into account the complex effects on consumers but also on firms:
  - Consumers: effects on choices, substitutions, preferences, heterogeneity, inequality, distribution
  - Firms: effects on price and non price competition, short and long run effects

Improving Nutrition with Taxes

- WHO has urged countries to tax sugary drinks to reduce sugar consumption, especially in children
  - Taxes on soda or sugar in soda have been introduced in France, Mexico, UK, Berkeley-Oakland, San Francisco, Boulder, Philadelphia, Chicago
  - Norway: "sugar tax" on sweets, chocolate and soft beverages in 2018
- Are taxes effective? regressive? What is the Pass-Through to prices?
- Dubois Griffith O'Connell (2017) "How well targeted are soda taxes?"

Excessive Added Sugar Consumption

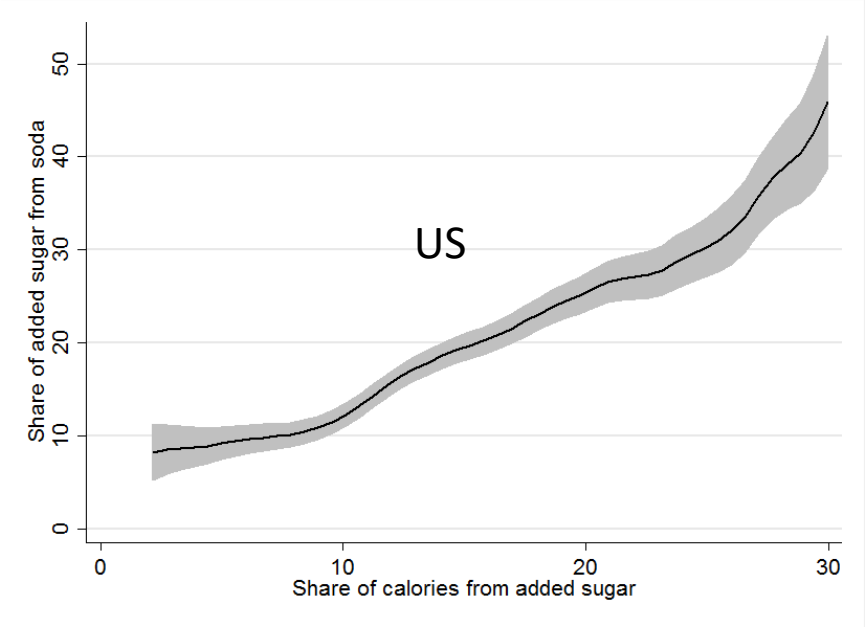
- Sugar consumption exceeds recommended levels across much of the developed world

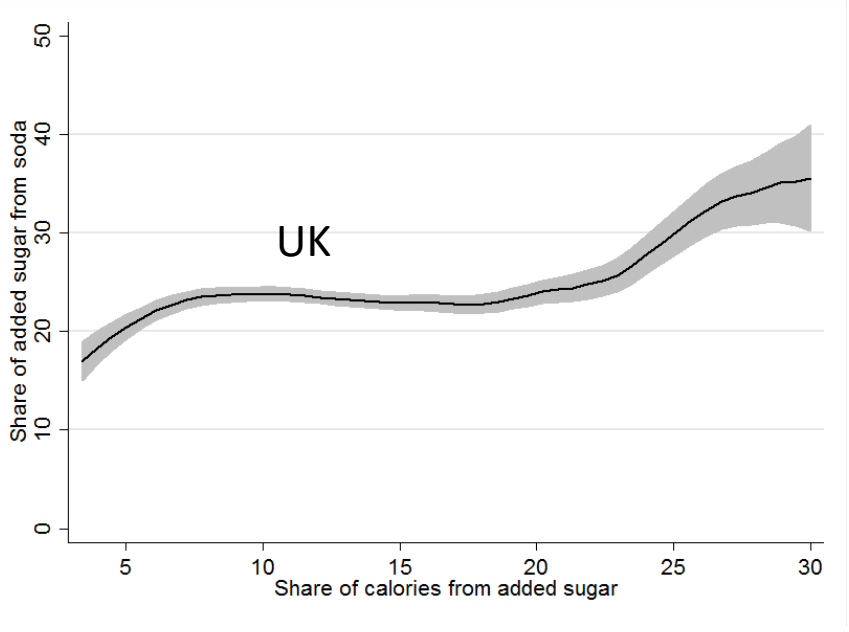


- Eating too much sugar is associated with diet related disease (for example type II diabetes)

Added Sugar from Soda

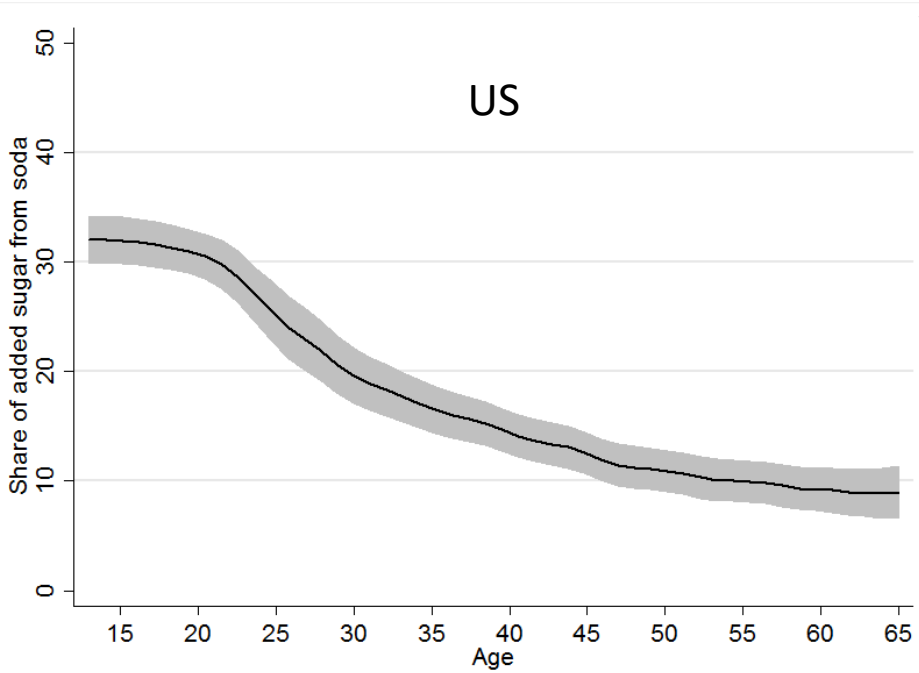
- Why target soda?
  - represents a substantial share of sugar consumption
  - is higher for those consuming a lot of sugar particularly children and young adults
  - has no redeeming nutritional characteristics

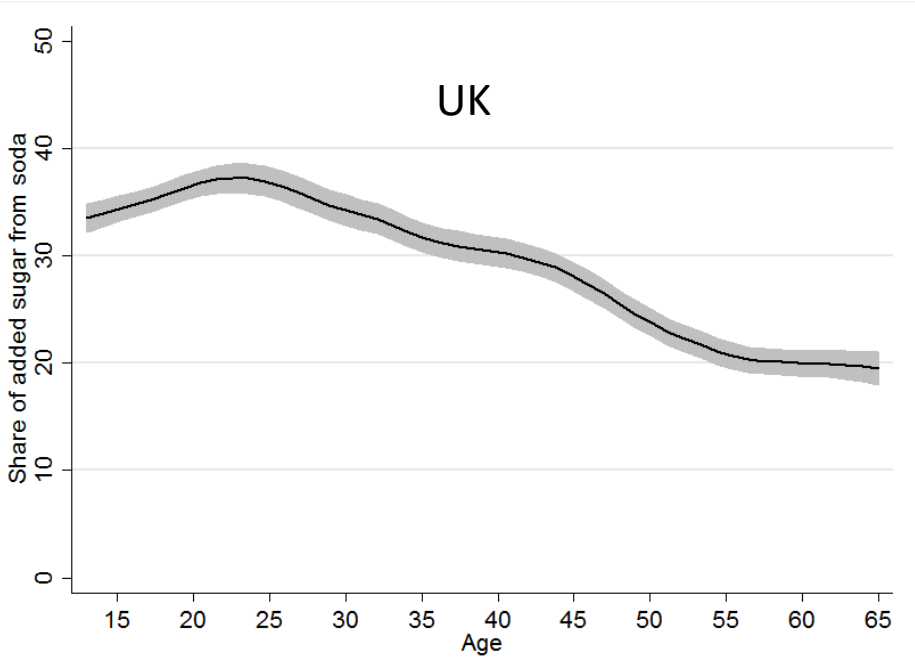




Added Sugar and Age

- Share is larger for young and have likely larger harm on future life





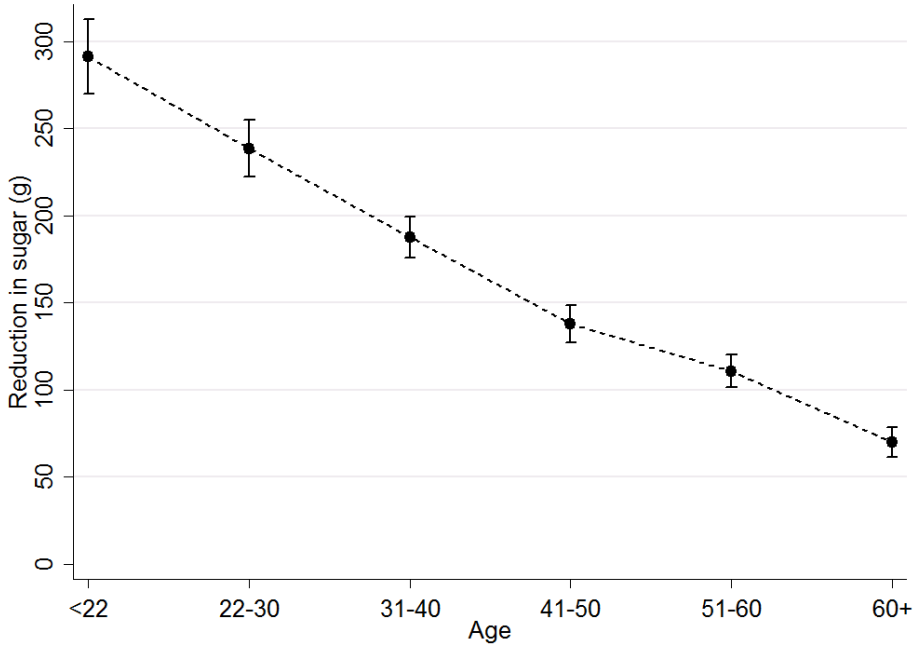
Demand and Supply Side Estimation

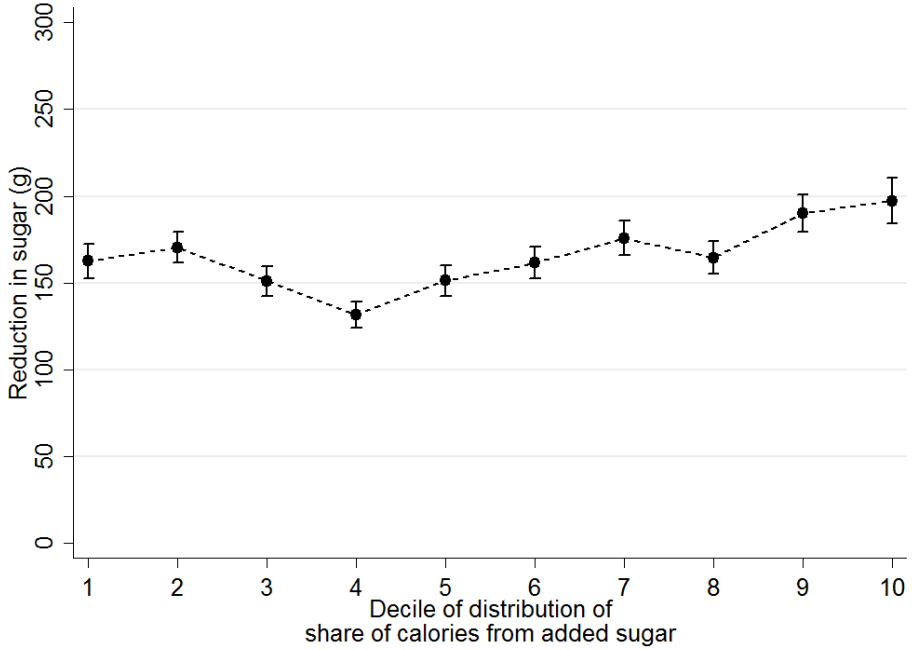
- Estimate consumer demand in UK drinks market: Longitudinal data on individual purchases at barcode level (Kantar UK, 5400 individuals, 2009-212), from stores and vending machines, allow identify heterogeneity of preferences
- Simulate impact of tax (25p per liter on sugary soda) on pass-through equilibrium on prices with oligopoly model: competition affects strongly the pass-through

Equilibrium Pass-Through of Tax

	Tax (£)	ΔPrice (£)	Pass-through (%)
Coca Cola 330	0,08	0,08	101
Coca Cola 500	0,13	0,20	164
Fanta 330	0,08	0,08	102
Fanta 500	0,13	0,21	168
Cherry Coke 330	0,08	0,08	100
Cherry Coke 500	0,13	0,19	154
Oasis 500	0,13	0,21	167
Pepsi 330	0,08	0,08	99
Pepsi 500	0,13	0,20	161

Reduction in Sugar Consumption by Age and Overconsumption





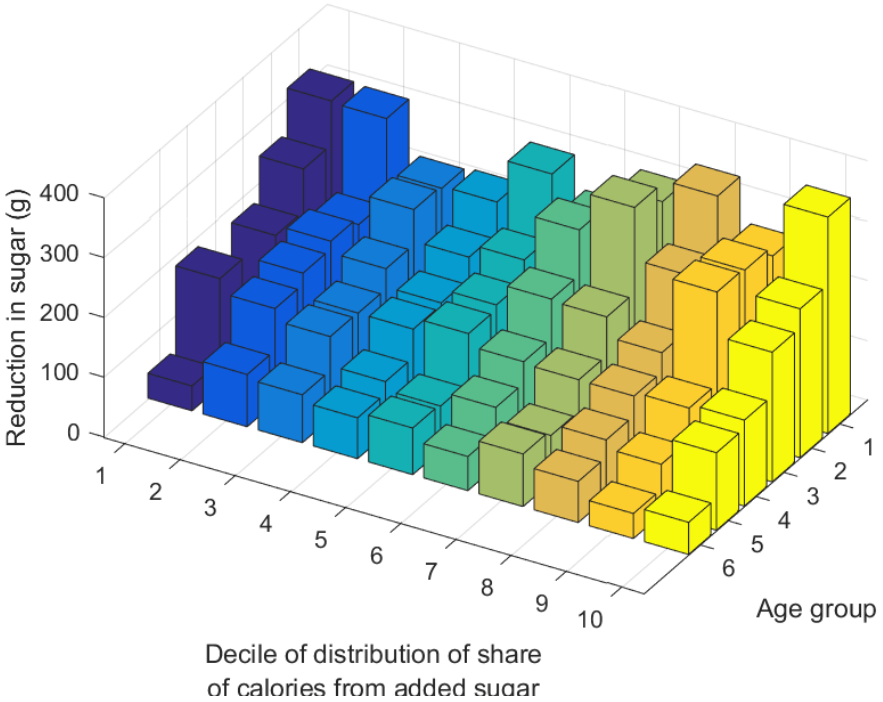
- Average effect of the tax on sugary soda:
  - -5.8 % reduction sugar from soda
  - -4.7 % reduction sugar from all drinks

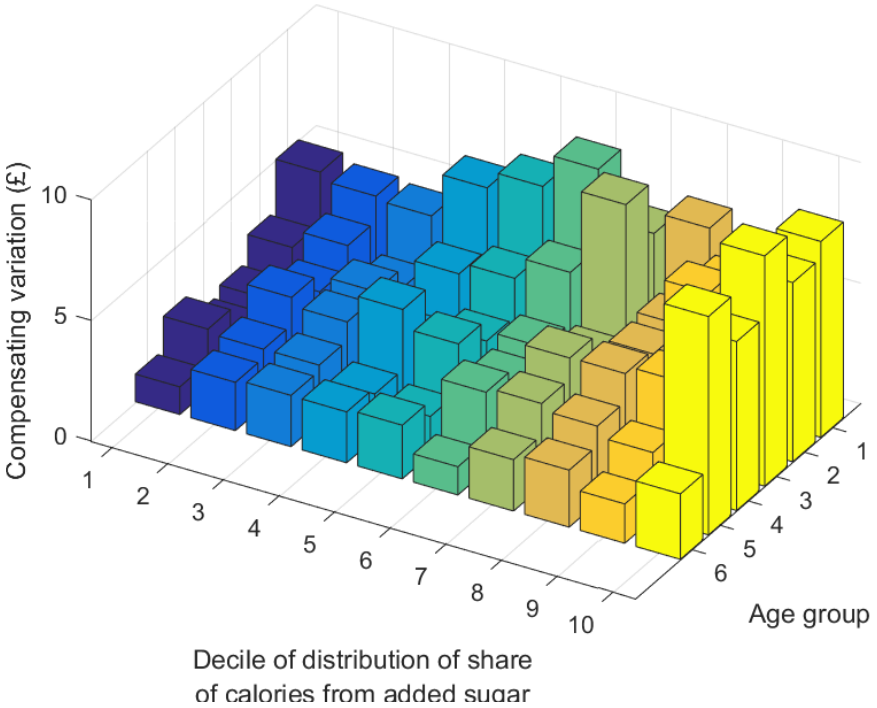
Dubois Griffith O'Connell (2017)
"How well targeted are soda taxes?"

- Show that soda taxes are effective at targeting young consumers (because of correlation between sugar preferences and price sensitivity)
- But less effective at targeting older consumers with high levels of total dietary sugar because of the lack of correlation between sugar preferences and price sensitive for older heavy sugar consumers

Compensating Variation versus Reduced Sugar Consumption

- Comparison of compensating variation and sugar reduction





Dubois Griffith O'Connell (2017) "How well targeted are soda taxes?"

- Approach captures arbitrary relationship between tax predictions and individual attributes
- Account for substitution to sugar in food (chocolates, other drinks, non sugary snacks)
- Highest monetary cost on poorer individuals, but tax unlikely to be strongly regressive if account for averted future costs from over consumption, because higher for the young and for heavy consumers

Dubois Griffith O'Connell "Effects of Banning Advertising in Junk Food Markets" Review of Economic Studies 2018

- Calls for restriction of advertising of "junk" food (UK currently bans advertising of foods high in fat, salt or sugar during kids programs)
- Ex ante ignore impact on markets which depends on:
  - How the demand shape changes with advertising
  - Whether advertising is expansionary or pure business stealing across brands
  - Strategic response of firms: price equilibrium
- Need counterfactual evaluation of supply and demand

Restrictions on Advertising for unhealthy products

- Model of consumer demand:
  - Allow advertising to impact demand in a flexible way, shifting and rotating the demand curve, with dynamics and external effects
  - Estimates on typical junk food market in UK (potato chips)
- Oligopoly supply with multi-product firms competing in price and advertising needed to:
  - Identify margins, costs
  - Simulate impact of advertising ban on equilibrium outcomes (prices, expenditures, quantities, nutrition)

Dubois Griffith O'Connell "Effects of Banning Advertising in Junk Food Markets" Review of Economic Studies 2018

- Propose to ban advertising for products with nutrient profiling score above 4:

Nutrient characteristics of brands

Brand	Nutrient profiling score	Energy	Saturated fat	Salt	Fiber
Walkers Regular	10	2164	2.56	1.48	4.04
Walkers Sensations	11	2021	2.16	1.78	4.25
Walkers Doritos	12	2095	2.86	1.65	3.02
Walkers Other	15	2017	2.50	2.04	3.14
Pringles	18	2160	8.35	1.55	2.74
KP	18	2157	5.87	2.10	2.70
Golden Wonder	16	2124	4.03	2.30	3.77
Asda	15	2125	4.13	1.88	3.31
Tesco	15	2141	4.63	1.92	3.57
Other	12	2083	3.84	1.75	4.06

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- Estimation shows that advertising
  - Increases tastes for advertised brand
  - Increases market size
  - Reduces price elasticities
  - Reduces Willingness To Pay for better nutrient
- Advertising differentiates products and reduces price competition
- When advertising is banned, firms decrease prices
  - Less differentiation
  - Saving on advertising budgets

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Effect of advertising ban on nutrient purchases

	Pre ban	Advertising banned	
		no price response	with price response
Energy	313.70		
% change			
Saturates	584.79		
% change			
Salt	264.94		
% change			
Nutrient score	13.78		
% change			

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Effect of advertising ban on nutrient purchases

	Pre ban	Advertising banned	
		no price response	with price response
Energy	313.70	265.94	
% change		-15.23	
Saturates	584.79	489.78	
% change		-16.25	
Salt	264.94	224.18	
% change		-15.38	
Nutrient score	13.78	13.72	
% change		-0.46	

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Effect of advertising ban on nutrient purchases

	Pre ban	Advertising banned	
		no price response	with price response
Energy	313.70	265.94	283.23
% change		-15.23	-9.71
Saturates	584.79	489.78	515.24
% change		-16.25	-11.89
Salt	264.94	224.18	237.67
% change		-15.38	-10.29
Nutrient score	13.78	13.72	13.62
% change		-0.46	-1.19

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- Effects of the advertising ban:
  - Substitution to healthier products (higher WTP)
  - Stronger price competition leads to lower prices (by 4% on average) that attenuate the reduction of quantity purchased
  - Profitability in the market is almost unchanged
  - If advertising is viewed as distorting prices, total welfare would rise even without accounting for health externatlities

Reformulation through Self Regulation

- In 2003 the UK government set a target of reducing the average salt intake of adults to 6g per day (while it was 9,5g per day at that time)
- Government encouraged voluntary product reformulation by the food industry to reduce salt content of food products and simultaneously ran a consumer awareness campaign highlighting the negative health risks associated with high salt intake
- Griffith, O'Connell and Smith (2017)

Reformulation through Self Regulation

- Evidence consumers did not switch to lower salt products after UK information campaign
- Between 2005 and 2011, salt in grocery purchases declined by 5.1% and was entirely attributable to reformulation of products by firms
- Firms coordination on salt levels incentivizes industry to coordinate on market shares (quantities or prices)
- May be anticompetitive
- Firms profits may increase or decrease

Conclusion

- Improving nutrition for better health should take into account the organization of markets and their degree of competition
- Evaluation of policy interventions needs to account for their effects on consumers but also on firms
- Data availability and economic methods allow to perform these evaluations
- Need more research on long term effects on consumers (habits) and firms (entry, exit, innovation)