

Microeconomic analysis of prices, food and nutrition

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November 2012

Introduction

- Large scale research programme to help understand possible policy responses to the growth in diet related disease
- Research funded by
 - European Research Council (ERC) Advanced Grant
 - Economic and Social Research Council (ESRC)
- Objectives are to
 - help clarify the rationale for and objectives of government intervention
 - help improve the evidence base on the effects of various policies options and policy design issues

Why should the government intervene?

- In general individuals are best placed to make choices over food purchases and consumption, and the market will lead to the best outcome
- However, there are some reasons to believe government may have a role in improving diet:
 - Information failings
 - External costs of consumption

Potential information failings

- Some consumers are ill informed about:
 - their own nutritional needs
 - the nutritional characteristics of a specific food product
 - some of the costs associated with consumption of certain foods
- In particular because:
 - costs are uncertain and are borne in the future
 - information can be complex and there can be a lot of it, meaning it may be difficult to identify the most relevant information
 - some consumers may not have the time or ability to process the information effectively

Potential external effects of consumption

- Individual may not take account of costs of their behaviour on others
- Diet related disease may impose costs on others
 - might raise public health costs
 - might lead to increased sickness absence, premature mortality, lower productivity
- Most of these costs are borne by the individual, but some may accrue to others

What policy levers are available to government?

- Policy can target both supply and demand of food products
- Policy levers:
 - Education and information provision
 - Regulation
 - Fiscal measures
 - Cash transfers

Education and information campaigns

- Attempts to directly mitigate the problem of *imperfect information*
- Examples: '5-a-day', 'Change-4-life' campaigns
- Questions we are investigating:
- how responsive are consumers? are some consumers more responsive than others? are ill-informed consumers responsive? what supply-side responses are there?

Regulation

- Direct intervention to alter nutritional characteristics of products or information provision
- Examples: salt reformulation (voluntary regulation), advertising bans, nutritional information and labeling
- Questions we are investigating:
- how effective are they? what the supply responses? who do they affect? what do they cost?

Food taxes

- Idea is to change the relative price of foods to lead consumers to substitute towards healthier alternatives
- Examples: Danish and New York 'fat taxes', other governments considering possible introduction, e.g. French surcharge on palm oil, Irish fat tax
- Questions we are investigating:
- how responsive are consumers to these price changes? are some consumers less responsive than others? what supply responses might we expect, e.g. how much of the tax will be passed-through onto prices?

Cash transfers

- There is a well known socioeconomic gradient in diet
 - households from higher socioeconomic groups have better diets, on average, than those from lower socioeconomic groups
- Cash transfers might help alleviate this; examples: food stamps in the US, benefit payments
- Questions we are investigating:
- Are differences in diet due to differences in income levels (in a causal sense)? differences in demographics and education levels? differences in preferences for healthy foods? different in prices faces?

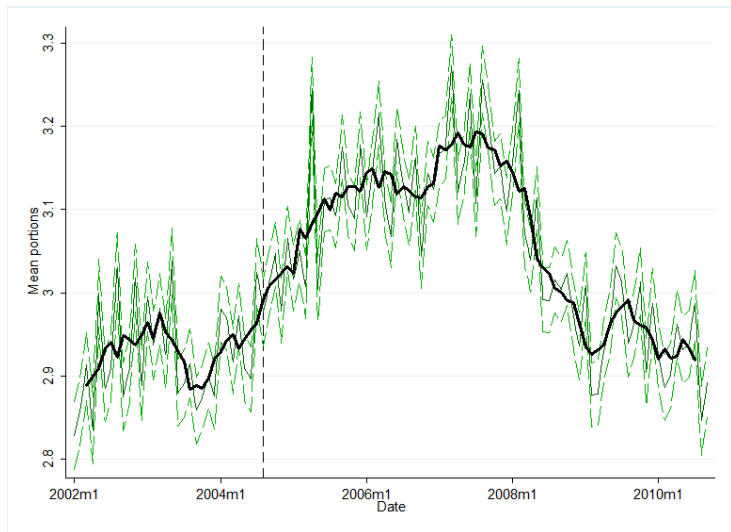
Some specific ongoing projects at IFS

- Ongoing projects so results are at a VERY preliminary stage
- ① 5-a-day campaign
 - what impact did it have? how lasting was the effect?
- ② Food taxes
 - pass-through of a fat tax in the UK butter/margarine market
- ③ The socioeconomic gradient in diet
 - how does an increase/decrease in income affect nutrition quality of a household's diet?
 - Income and diet over the recent recession
- ④ Regulation
 - The impact of banning advertising on crisps: would it lead to a reduction of crisp purchases, or just reallocation between brands?
 - Salt reformulation and information campaign

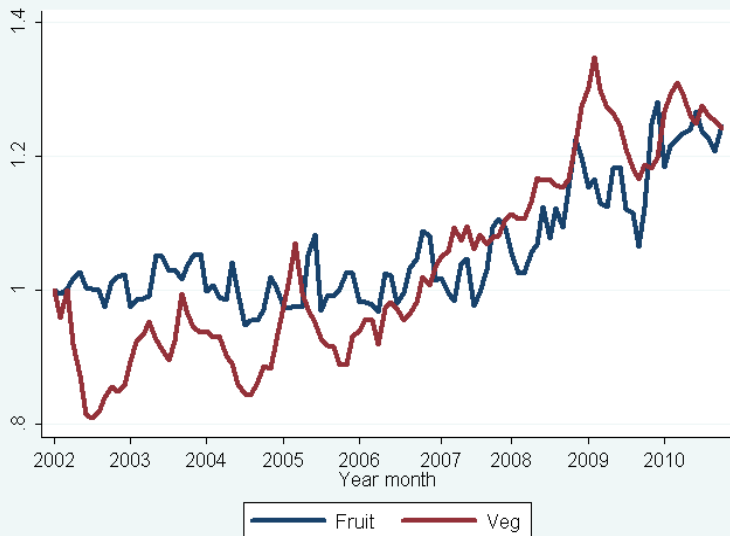
(1) the 5-a-day information campaign

- World Health Organization recommends eating at least 5 portions of fruit and vegetables as means of reducing chronic disease
- 5-a-day campaign aimed to increase consumption of fruit and vegetables
- Mean portions purchased range from 2.9 to 3.2, well below recommended 5 a day
- Very low for households with kids, below 2 portions per person per day

(1) Mean portions of fruit+veg purchased



(1) Retail price index for Fruit and Vegetable

Notes: Fruit and  

(1) Purchases of fruit and veg portions

Dep var: purchases of	(1) fruit and veg portions	(2) fruit and veg portions	(3) fruit and veg portions
(Aug 2004- Nov 2010)	-0.0283*** (0.0034)		
(Aug 2004- July 2006)		0.0555*** (0.00384)	0.0894*** (0.00387)
(Aug 2006 - Nov 2010)		-0.0980*** (0.00370)	0.276*** (0.00689)
Price fruit			-1.451*** (0.0303)
Price veg			-0.702*** (0.0274)
Observations	1,076,736	1,076,736	1,076,736
Number of hhno	32,530	32,530	32,530
HH Effects	Yes	Yes	Yes
Month	Yes	Yes	Yes

Note: An observation is a household month.

(2) Food taxes

- Idea is that increasing price of unhealthy food will lead consumers to substitute towards healthier alternatives
- Effectiveness of policy depends on
 - Which goods are subject to tax
 - How peoples' consumption responds to price changes
 - How effective the tax is at changing price

(2) Food taxes - which goods?

- Many causes of poor diet - imbalance of calories, excessive salt, sugar and saturated fat consumption, insufficient fruit and veg consumption ...
- Suggested targets include
 - Particular nutrients (e.g. saturated fat, sugar)
 - Groups of goods deemed to be unhealthy (e.g. soft drinks)
 - VAT reform

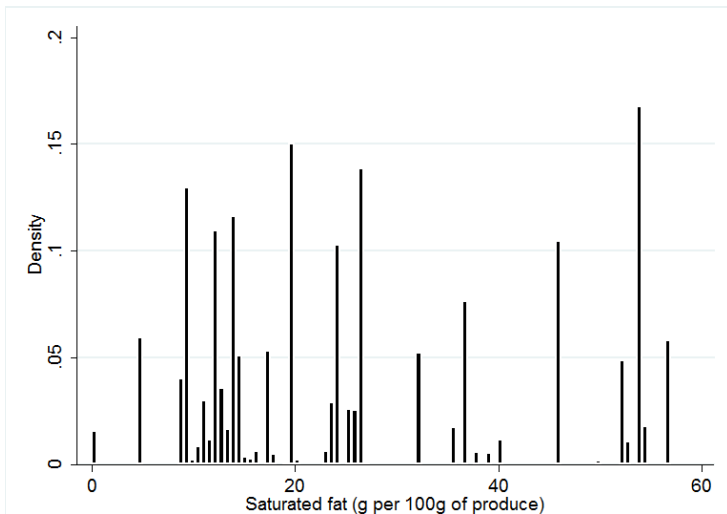
(2) Food taxes - how do consumers respond

- A price increase typically leads people to reduce consumption of the taxed good
- May also lead to change in consumption of other products
 - Increased price of strawberries may increase demand for raspberries
 - and reduce demand for cream
- Size of these effects will determine nutritional impact of any price changes
 - measured by the price elasticity of demand
 - change in demand for good A with respect to a 1% price increase for good B

(2) Food taxes - how do consumers respond

- We can look at the effect of a tax on demand for broad food groups, but similar products are generally seen as closer substitutes for each other
 - if the price of full fat milk increases most consumers would switch to semi-skimmed milk before moving away from dairy
- And products within food groups can have very different nutritional contents ...

(2) Food taxes - variation in saturated fat in butter/margarine



(2) Food taxes - elasticities across most popular butter/margarine

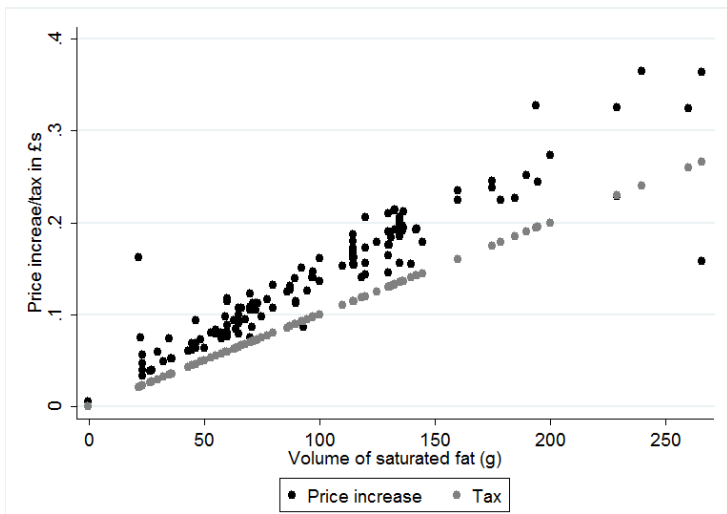
	Country Life 250g	Clover 500g	Flora Light Low Fat 500g	Flora Light Low Fat 1Kg	Can't Believe 500g	Utterly Buttely 500g	Lurpak 500g	Tesco Value Butter 250g	Lurpak Lighter 500g
Country Life 250g	-2.481	0.044	0.043	0.045	0.032	0.030	0.042	0.025	0.046
Clover 500g	0.018	-2.719	0.050	0.072	0.035	0.033	0.054	0.020	0.060
Flora Light Low Fat 500g	0.019	0.052	-2.667	0.068	0.034	0.032	0.052	0.021	0.058
Flora Light Low Fat 1Kg	0.014	0.054	0.048	-2.602	0.030	0.029	0.023	0.013	0.027
Can't Believe 500g	0.019	0.048	0.045	0.056	-2.536	0.033	0.042	0.024	0.046
Utterly Buttely 500g	0.018	0.048	0.045	0.057	0.035	-2.558	0.041	0.024	0.047
Lurpak 500g	0.016	0.050	0.045	0.029	0.028	0.026	-2.444	0.014	0.018
Tesco Value Butter 250g	0.020	0.038	0.039	0.034	0.032	0.030	0.030	-2.165	0.032
Lurpak Lighter 500g	0.016	0.050	0.045	0.031	0.028	0.026	0.017	0.014	-2.440

Estimates from Griffith, Nesheim and O'Connell (2010)

(2) Food taxes - response of firms

- Often assumed introduction of £1 tax mechanically results in £1 increase in price
- But conditions under which this is true are very restrictive
- How firms choose to adjust prices in response to tax depends on
 - Structure of tax
 - Portfolio of products produced/sold by firm
 - Intensity of competition among firms

(2) Food taxes - impact of tax on saturated fat in butter/margarine on prices



(2) Food taxes - summary

- Impact of food taxes are complicated
- Response of consumers and firms are key to understanding impacts
- Both are complex and vary depending on what good the tax is levied on, what form the tax takes and a number of factors specific to the industry

(3) The socioeconomic gradient in diet

- Quality of diet and socioeconomic status are correlated
- Is this correlation caused by differences in income? or by other factors such as households having different preferences or facing different prices?
- We estimate a model of food demand to separate out these effects
- We find (preliminary) evidence that differences in preferences are responsible for most all of the socioeconomic gradient in diet
 - in the short run at least an increase in income seems to lower the nutritional quality of households' diet

(3) Income and diet over the recent recession

- Over the recent recession households experienced a decline in income and a contemporaneous large increase in the price of food and changes in relative food prices
- There was a substantial decline in expenditure on food (around 4%) - higher for DE households than AB
- Households compensated by purchasing cheaper more calorie dense foods - AB did this more than DE
- Nutrition improved in some dimensions - lower salt, higher fibre
- Nutrition declined in other dimensions - higher fat and more sugar

(4) The impact of banning advertising on crisps

- Estimate model of demand and supply in market for crisps using transaction level data
- Use model to simulate counterfactual equilibrium in which advertising is banned
- Very preliminary results suggest:
 - Banning advertising would reduce overall crisps demand by a small amount
 - Main effect would be to shift demand between brands (from major brands to generic brands)
 - Firms that advertise a lot reduce price, other firms increase prices

(4) Salt

- Concern about overconsumption of salt led the government to take a two-pronged approach:
- Reformulation
 - the government worked with food manufacturers and retailers to reduce the amount of salt that goes into food during production
- Public awareness campaign
 - inform consumers of the issues and provide them with guidance on how to reduce their salt intake
- There has been a substantial decrease in salt
- How much was driven by reformulation and how much by changes in preferences leading consumers to substitute towards lower salt products

Some other ongoing projects at IFS

- Comparison of food purchasing behaviour in the US, France and the UK
- Long term trends in calorie consumption and physical activity in the UK
- Impact of nutrition labeling on purchase behaviour
- Impact of minimum price and of banning multi-product offers on alcohol purchases
- Impact of Healthy Start vouchers