Evaluation of Policies to Promote Healthy Eating in the EU[1]

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1 Background

Unhealthy diets lead to a range of serious conditions such as diabetes, cancers, cardio-vascular disease and stroke which, as well as individual pain and suffering and shortened life, create a burden for the state in the form of health care costs and lost economic production; diseases linked to overweight and obesity account for around 5% of total health care costs in Europe, and at least as much again in lost economic production. In this context it is no surprise that healthy eating has become a major public health concern, prompting many European Member States to take measures to improve their citizens' diets. Neither is it a surprise that governments are at least paying lip-service to a desire that their interventions should be evidence-based, meaning there should be evidence that they are effective and cost effective. Probably, though less explicitly stated, politicians would like evidence that interventions will be acceptable to the public. These wishes are more complex than appears at first sight.

2 What have governments done?

Policy interventions may be classified into two broad categories: (a) measures supporting informed choice; (b) measures changing the market environment. Informed choice is the basis for consumer sovereignty which is integral to economic models of utility maximisation and to the neo- liberal politics common to the EU Member States. Measures included in this category are nutritional education programs, nutrition labelling, social marketing (information from the State) and restrictions on commercial advertising[2]. Measures to change the market environment are more interventionist and have been less widely used by governments, at least with respect to adults. They include food standards to regulate nutrient content of foods, taxes and subsidies on unhealthy foods or nutrients, regulation of the foods available in school or workplace canteens and measures to make healthy foods more readily available to low income households.

While information is necessary for informed choice, it does not ensure healthy eating: informed but unhealthy choices continue to impose costs on health care systems and economic productivity (commonly called social costs) that are borne by the whole of society. Measures to change the market environment may be thought of as intending to push people towards what is good for society as a whole rather than for the individual (known within the jargon of economics as eliminating externalities).

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[2] These may be considered as controls on misleading information.

Table 1 shows the frequency of specific measures implemented by Member States identified by the project EATWELL. Information measures dominate, as do measures targeted at children rather than adults.

Table 1. Number and Type of Diet and Health Measures in the EU identified by EATWELL (period to March 2010)

	Europe
Measures supporting informed choice	**82**
Advertising controls	5
On advertising to children	*4*
On general advertising	*1*
Public information campaigns	38
Nutrition education	35
For children at school	*31*
For adults / generic public (e.g. at workplace)	*4*
Nutritional labelling	4
Nutritional information on menus in restaurants	0
Measures changing the market environment	**29**
Fiscal Measures	3
Tax/subsidies on foods to the population at large	*1*
Measures aimed at disadvantaged consumers	*2*
Regulate meals	14
School meals (including vending machine bans and provision of free fruit and vegetables)	*13*
Workplace canteen meals	*1*
Nutrition-related standards	1
Government action to encourage private sector action	9
Availability measures for disadvantaged consumers	2
TOTAL	**111**

Measuring the cost-effectiveness of an intervention requires first calculating its effectiveness (the impact on diet), next the impact of the dietary change on health and third providing a valuation to the societal benefits of the health improvement and their comparison with societal costs.

3 How reliable is the science?

As an economist it would be unwise to step far into the murky waters of evaluating the strength of the scientific evidence for diet-health relations. Recommendations for healthy eating, such as those made by the World Health Organisation (WHO), though taking into consideration the latest scientific evidence, have often been made by committee as a compromise between what is known and what is considered achievable. So, for example, the UK and others recommend the intake of five eighty gram portions per day of fruit and vegetables (undifferentiated by gender, age, health status of the consumer), Denmark 6 portions, France 10 and Japan 13 (50 gram) portions of vegetables plus 4 of fruit (which raises the question whether fruit and vegetables are 'equal'). For salt the UK recommends 6g/cap/day, WHO 5g and Australia 4g. More important from an analytical perspective, dose-response relations are largely absent, the best that is readily available in the scientific literature is an estimate of the relative risk at the population level of consuming above (below) the recommended level compared to meeting the recommendation.

4 Estimation of policy effectiveness

Estimating the effect of policy intervention on diets is no easy matter. Randomised Control Trials (RCT), the supposed gold standard of the medical profession, do not work well in the real world. They involve controlling (holding constant) everything other than the variable of interest, but in reality much else changes too, for example market prices (either independently or because of the policy intervention stimulating or dampening demand). An econometric approach using statistical analysis of secondary data is a more realistic option because other variables can be held constant (controlled) in multivariate approaches, but econometric approaches are also fraught with difficulty, most notably caused by the absence of good data following the same people over a period of years, so analysts usually find themselves in the position of using 'imaginative' approaches to create 'natural experiments' (holding everything else constant in a statistical sense) using data collected for other purposes (e.g. health survey or household budget survey data). Ideally the following conditions would be met:

- the assessment should focus on meaningful target variables—preferably health outcomes such as blood pressure or CVD, otherwise BMI or food consumption. Too often evaluations don't look beyond knowledge or attitudes;
- the methodology should be based on sound statistical analysis and appropriate data. Such matters can be rather technical, but include adequate sample size, random sampling (avoidance of 'self-selection bias'), proper accounting for confounding factors (other variables which might influence the outcome of interest and should be controlled for during the analysis), careful specification of the 'counterfactual', and so forth;
- the method should be able to assess the impact of an intervention on relevant segments of the population, not just measure an average effect. In particular, impacts on 'at risk' or deprived households should be identified;
- the analysis should identify long term as well as short term effects.

Within EATWELL a number of assessments were undertaken, for example of the effects of the ban on advertising 'junk foods' on children's television in the UK, a ban on vending machines in French schools and an assessment of fruit and vegetable schemes in the UK, Spain and Denmark. There are also a small number of other technically sound studies in the literature. As a very broad generalization these suggest interventions of all types have a small but positive influence on healthy eating. None is really able to capture long run effects since most healthy eating policies are relatively new; and often sample sizes are inadequate to capture effects on small but relevant population sub-groups (e.g. ethnic minorities or poor elderly urban inhabitants).

Measuring long vs short term effects is a particular problem even were long time series of data available. This is because over a long period of time there will be changes in social norms that are not readily tied to specific policy instruments. It is tough even now to understand precisely why social norms with respect to smoking in public places, drinking and driving and wearing seat belts have changed dramatically over 20-30 years (with behavior changing accordingly) but they have not done so with respect to recreational drug use or binge drinking despite seemingly similar efforts by politicians.

Yet a further problem with respect to estimating policy effectiveness is synergistic effects. When a range of policies is simultaneously targeted at a specific issue (e.g. social marketing, education and reformulation to cut back salt intake in the UK) it is not possible to determine their separate influences, meaning it is hard to develop an evidence-base to guide future interventions.

5 Cost effectiveness

Measuring cost-effectiveness raises further complex issues, many of them conceptual. On the benefit side of the benefit-cost equation it is useful to distinguish between *private benefits* which accrue directly to the individual consuming the food (e.g. reduced risk of cancer and its effects), and *public benefits* which are public sector savings from reduced visits to doctors and hospitals, reduced medication and reduced costs associated with missed days of work. These are often intermingled by government departments and public health professionals.

The Quality Adjusted Life Year, QALY, is the most commonly used measure of benefit within the public health profession[3]. It is an attempt to measure in a single figure the benefits of an intervention that increases both life expectancy and the quality of life. QALYs assign to each year of ill-health a utility value that is a fraction of the value of a year of good health. What QALYs measure are the private benefits of a policy that improves people's well-being by making them live longer and in better health. In other words, they reflect how much people value their own improved health. QALYs do not measure the public benefits, those that result from a reduced burden on health care systems and economic production. These are sometimes called a reduction in the c*ost of illness.* Conceptually, the savings resulting from a reduced cost of illness should always be included in an assessment of the benefits of a public policy intervention. Conversely private benefits, measured by QALYs, should only *sometimes* be

[3] An approximately equivalent (but inverse) measure is the Disability Adjusted Life Year (DALY)

included—the determinant being whether people knowingly choose the unhealthy option (by exercising informed choice) or they choose the unhealthy option because they are not informed, lack the education to assess the information or make choices irrationally or mindlessly, as suggested by behavioural economists. If the selected diet is the outcome of informed choice, whereby people take into account the risks to their health, it is wrong to measure their health benefits (as QALYs) without off-setting lost utility from being unable to choose their preferred diet; like mountaineering or any other risky activity freely entered into, it is not logically correct to say that banning it would increase participants' utility. The public health profession generally does not make the distinction between whether unhealthy choices are purposely or inadvertently taken and includes the utility value of all health gains as a benefit. The economics profession tries to make the distinction between private and social benefits, but does so by assuming everyone behaves rationally all of the time.

The evidence on cost effectiveness is mostly from two large studies by OECD and ACE Australia. They use the public health approach of ignoring utility losses associated with being unable to make preferred choices and find that virtually all interventions, even if only marginally effective, are also cost effective because they are relatively cheap[4]. A surprising exception is nutrition education in schools, until one recalls that future benefits are discounted (generally at around 3% per year), so immediate undiscounted costs of nutrition education are offset against benefits from a reduced probability of ill-health discounted perhaps 60 or more years into the future[5].

Unsurprisingly fat taxes are extremely cost effective using the public health approach: they save health care costs, generate QALYs of health benefits and actually raise revenue! Economists, assuming all unhealthy eating is rational and therefore correcting for lost utility from consumers being forced to pay higher prices and being unable to exercise their preferred choices, find the fat taxes to be still marginally beneficial to society as a whole.

The most cost effective intervention appears to be the Women Infants Children (WIC) programme in the US which provides discounted healthy food vouchers to low income women who are pregnant or have infants; every WIC dollar has been calculated to actually reduces Medicaid payments in infants' first year alone.

6 Public Perceptions

Finally, does it matter what people think? To politicians, almost certainly yes, they want, in general, to be popular and re-elected. EATWELL carried out a survey of 3000 people in 5 countries on public attitudes to alternative interventions. Average support across policy types was high (62.5% of responses in the agree/strongly agree range). Highest acceptance was found for education measures in schools (84.9% supportive), ironically the only non cost-effective

[4] It is common when using QALYs (or DALYs) to calculate the cost per QALY gained from an intervention. This is known as *cost-utility analysis* (CUA), though in this report we use the term cost-effectiveness interchangeably with cost-utility. An implicit value placed by government on the QALY is given by the cut-off point whereby interventions (or new medicines) are approved for use in the health service. For example the National Institute for Health and Clinical Excellence (NICE) in the UK uses a figure of about €35,000.

[5] The discounted present of a €100 benefit in 60 years time at 3% discount rate is €17

intervention. Standards on workplace meals received the lowest support (40.6%), but for no measure was stated support less than opposition (even taxes—with the revenue used to promote healthy eating) had 56% support against 19% opposition. Of course, surveys of this nature are prone to bias because of the hypothetical nature of the exercise, and when asked how much of a tax rise they would be prepared to pay to finance the intervention, policy support evaporated in most cases. Nevertheless the high level of support, even for quite interventionist measures, should be somewhat reassuring to politicians.

7 Conclusions

Making evidence-based policy decisions is not as easy as one might imagine; there are several steps in the process and every one of them is problematic. With respect to healthy eating though, a body of evidence is building up that a much better job of evaluation can be done than is the case with most government efforts, that most policies are effective and cost effective and that the public is widely supportive of government action. Thus although the evidence base is incomplete, it is sufficient to justify intervention, even including measures which change the market environment such as fat taxes or, especially, measures targeted at subsidizing healthy eating in low-income families. Better data and better understanding of how and why informed consumers make unhealthy choices could greatly improve the evidence base.