Financial incentives and disincentives
to encourage healthy eating

PREPARED FOR WHICH?
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Which? Food Campaigns

This paper, prepared for Which? by Corinna Hawkes, forms part of our work to support the majority of consumers who want to know more about what they are eating, understand what constitutes a healthy diet and make healthier food choices at a price they can afford.

Our report *Hungry For Change*, published in March 2009, set out the measures Which? wants government and industry to take.

As part of the actions that are needed Which? has called for Government to examine financial incentives and disincentives to encourage healthier food choices. This report was commissioned by Which? to enable a better understanding of the types of incentives or disincentives that are available and the evidence to support their use.

The report and the recommendations made do not necessarily reflect the views of Which? but will help to inform our policy and campaigns in this area.

The author would like to thank the many people who contributed to this report by taking the time for written or spoken interviews. Particular thanks go to those involved in implementing or piloting financial incentives programmes, without whom this report would not have been possible.

For further information about Which?'s food campaigns please contact: food.campaignsteam@which.co.uk

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- Financial incentives are rewards of monetary value that aim to induce improvements in people's behaviour. Financial disincentives are penalties of monetary value that likewise aim to induce improvements in people's behaviour. Financial incentives and disincentives are now increasingly being discussed as a means of encouraging healthy eating. The rationale for such an approach stems from the basic economic logic that consumers will make healthier food choices, or otherwise take action to improve their diet, if it involves an economic gain (or perceived gain) and vice versa.

- It is very timely to examine the potential of financial incentives to encourage healthy eating. In the current economic climate, consumers are more concerned about their personal finances and thus more likely to respond to financial incentives. There is an increasing amount of interest in the health research community in financial incentives for healthy behaviours, with three recent reviews and a new university research centre dedicated to the subject. Moreover, key government strategies on health and obesity – such as the *Choosing Health* and *Healthy Weight, Healthy Lives* strategies for England – identify the potential for financial incentives to promote health.

- This report identifies and exemplifies the different types of financial incentives that could be applied to help consumers make healthier food choices. It identifies possible types of financial incentives and disincentives, and categorises them into a conceptual framework. It then presents the rationale for each type of incentive and provides examples of their implementation and, where possible, evidence of their effects. The report ends with a set of recommendations.

Table 1 **Conceptualising types of financial incentives and disincentives to encourage healthy eating**

	Consumer behaviour	Behaviour of food and health service providers
Food prices	■ Food taxes ■ Price promotions ■ Price restructuring in a discrete environment ■ Portion size pricing	■ Not applicable
Subsidies	■ Food vouchers ■ Vouchers for educational activities and programmes for healthy eating	■ Subsidising agricultural producers ■ Subsidising retailers ■ Subsidising meal providers
Financial rewards and penalties	■ Rewards for purchasing/ consuming nutritious foods ■ Rewards for educational activities and programmes for healthy eating	■ Rewards for educational activities and programmes for healthy eating ■ Rewards and penalties for food advertisers

Types of financial incentives

- There are three general categories of financial incentive and disincentive: those that directly manipulate food prices, those that subsidise foods or related behaviours, and those that provide financial rewards or penalties (Table 1). These financial incentives and disincentives can be targeted at consumers or food and health service providers. Within the general categories, there are several different types. To target consumers, these types comprise: food taxes, price promotions, restructuring prices in a discrete environment, and 'portion size pricing' (manipulating food prices); food vouchers, and vouchers for healthy-eating related activities (involving subsidies); and rewards for purchasing/consuming nutritious foods and for educational activities and programmes that encourage healthy eating (financial rewards and penalties). To target providers, these types comprise: subsiding food production and retail (subsidies); and rewards for healthy food provision and healthy-eating related activities, and penalties for advertisers (financial rewards and penalties). There is no food price category for provider-targeted incentives since they do not target prices directly, albeit having implications for food prices.

- Financial incentive or disincentive schemes can be implemented through government regulation or guidelines, on a voluntary basis by the private sector, by academic researchers setting up experiments for study, or by a combination of these stakeholders. They can also be implemented at a local or national level, and in a wide range of settings, including retailers, worksites, restaurants and schools.

- The review identified around 35 examples of financial incentives and disincentives implemented to encourage healthy eating in a national or local context. Most examples come from the United Kingdom (UK), but there are also many from the United States (US), and to a lesser extent from other countries. Overall, most of the examples identified were consumer-targeted incentives rather than provider-targeted incentives. The number of consumer-targeted incentives was roughly equally divided between food prices, subsidies and financial rewards/penalties. The majority of the examples identified were subject to some form of formal or informal evaluation. The majority (20 out of 35) were led and implemented by government bodies, with the rest being implemented by the private sector or as experimental pilots by researchers.

Consumer-targeted incentives

- **Targeting food prices directly** involves manipulating food prices at point-of-sale (e.g. retail, catering or alternative forms of food provision). Direct mailing means that some types of food price incentives can also be delivered direct to consumers.

- Based on the precedent of tobacco and alcohol taxes, it has been widely and controversially suggested that taxes should be applied to foods to alter their prices and thus the incentive to purchase. There are no actual examples of 'food taxes' applied to promote healthy eating, although taxes are often applied differentially to different foods for fiscal reasons. The effects of these fiscal measures, coupled with modelling studies, provide mixed evidence on the effects of food taxes on measures of consumption. For example, studies find differences in the responsiveness of consumers to changes in food prices, that taxes could be disproportionately negative or positive for low income groups, and that food taxes would be both likely and unlikely to have an appreciable effect on food consumption. It has also been suggested that taxes could be used as a means of raising revenue for health promotion. There is one example of such a tax – in the small Pacific Island of French Polynesia, where a tax on alcohol and certain sweetened snacks and drinks raises revenue for a health promotion fund. The idea of taxing soft drinks is also gaining some credibility in the US.

- 'Price promotions' can take the form of discounts (e.g. '20% off') or extra-product promotions (e.g. 'two for the price of one', or 'buy-one-get-one free'), and are temporary in nature. In contrast, 'price restructuring in a discrete environment' refers to a permanent alteration of the relative prices of different foods in a controlled environment. Studies have examined the effect of price restructuring in theUS Price promotions to promote healthy eating have been applied by supermarkets in the UK, and two research studies – one from the UK and one from New Zealand – have examined the effect of price promotions specifically-designed to encourage healthy eating. The evidence from these examples shows that price promotions and price restructuring can affect sales, with the effect ranging from very moderate to significant depending on the size of the price differences, the nature of the promotion, and the food item. They also indicate that promotional signage in the absence of a financial incentive has relatively little effect. Results of follow-ups to test the sustainability of the effects varied, with most limited to the duration of the promotion, but with some showing longer-lasting effects. Evidence from retail price promotions in general shows that price promotions can influence purchasing patterns and promote overall greater consumption of the product, but this is highly dependent on the nature of the promotion (e.g. the depth of the discount), the shopper, and the specific food.

- Value pricing refers to structuring product prices so that the per unit cost (e.g. price per gram) decreases as portion size increases, thus increasing the perceived value to the consumer and their incentive to purchase the larger size. It has been suggested that the food industry should stop this practice and increase prices at the same rate as increasing portion size, here termed 'portion size pricing'. Except for one limited study, there is no evidence available on the effect of shifting from value pricing to portion size pricing. The food industry has not included this strategy as part of their efforts to reduce energy intake through smaller portion sizes.

- Unlike incentives that directly manipulate food prices at point of sale, **subsidies** are provided direct to consumers before they enter a retail environment to subsidise the cost of purchasing a product. Subsidies can thus be used in a more targeted manner, and are often used to target lower income consumers.

- 'Food vouchers' – referring to vouchers or coupons provided direct to families to purchase food – are a key mechanism of providing subsidies. There is a nationwide voucher programme in the UK (Healthy Start) that aims to encourage milk and fruit and vegetable consumption among certain groups of pregnant women and families with young children. Local level examples in the UK suggest that voucher schemes are able to boost consumption of fruit, vegetables and fruit juice. In the US, voucher programmes are more widespread. Examples include the Special Supplemental Nutrition Program for Women, Infants and Children and the Farmers Market Nutrition Program. Studies in the US show that vouchers can effectively increase consumption of fruit and vegetables, especially at farmers' markets. In light of this evidence, the government recently funded a Healthy Incentives Pilot to test the potential of incorporating more incentives into existing nationwide food voucher schemes to promote healthy eating.

- The use of **financial rewards** to encourage healthy behaviours is based on the theory that behaviour reinforced by rewards is likely to be repeated, and that this behaviour becomes learned over time, even in the absence of such rewards. In contrast, financial penalties aim to 'unlearn' unhealthy behaviours.

- In the UK, reward schemes to encourage healthy eating are often focused on children, such as the Food Dudes and Fuel Zone schemes and related spin-offs. These initiatives have been shown to encourage school children to consume healthy school meals and fruit and vegetables. In all cases, complementary educational, marketing and modelling activities accompanied the reward schemes. There are also examples of supermarkets implementing reward-style promotions to encourage healthy eating.

- Programmes to reward individuals to participate in educational activities or programmes to encourage healthy eating have not been much used in the UK, although one example of a web-based educational programme utilising rewards was identified. The recent Health in Pregnancy grant is a quasi-example, and a pilot scheme to test the use of rewards is underway in Birmingham, UK. In the US, financial rewards for weight loss programmes that typically include some form of dietary advice have been found to work over the short term but not the long term. Rewards for educational activities around healthy eating appear to be more prevalent inthe private sector, such as in employer-based 'workplace wellness schemes' or healthy lifestyle programmes of health insurance companies. These schemes are now gaining international prominence and reviews of the evidence suggest that rewards-based incentives can increase participation by employees.

Provider-targeted incentives

- Offering financial incentives to food and health service providers can be used to encourage them to produce or provide healthier food options, or provide services that encourage the uptake of those options. **Subsidies** are the key form of provider-targeted incentive, and can be targeted at food producers, food retailers and food caterers.

- On the production side, it has been proposed that the European Union (EU)'s Common Agricultural Policy (CAP) should be reformed to promote healthier eating by altering the system of 'agricultural subsidies'. Analysis by the economics research community tends to dispute this analysis. No example could be identified of a subsidy being specifically altered or provided to take account of health concerns. One agricultural subsidy programme to encourage substitutions between different types of vegetable oil was mooted in US legislation but never passed.

- 'Retailer subsidies' have the potential to increase the provision of nutritious foods by food retailers. Subsidies can provide funds to: (1) new forms of retail provision; (2) existing retailers to sell more nutritious foods; and/or (3) existing retailers to locate in areas with poor food access. With regard to new forms of retail provision, a limited number of evaluations suggest that government-subsidised food co-ops and socially-oriented forms of fruit and vegetable provision are popular with participants, who also report that they stimulate greater consumption. With regard to existing retailers selling more nutritious foods, the Healthy Living Programme of the Scottish Grocery Federation (redesigning the display and marketing of fresh produce in convenience stores and providing wider variety, now being piloted in England) has had a positive impact on sales. Using subsidies to attract large retailers into deprived areas has not been used widely as a strategy to promote healthy eating in the UK. In the US, the use of Fresh Food Financing to provide grants and loans to 'healthy' retail projects has been successfully tested in one State and is now being developed in others.

- 'Meal provider subsidies' include the provision of subsidies to school meals or snacks. Many governments around the world, including in the UK, provide school meal subsidies, and there are an increasing number of schemes in the EU and the US that subsidise the provision of fruits and vegetables, such as the School Fruit and Vegetable Scheme in the UK. These programmes have been much discussed elsewhere and are not evaluated in this report.

- Providing **financial rewards and penalties** to food and health service providers to encourage healthy eating has not been widely used in the UK. Scotland has a Healthyliving award for catering operations, as do many local authorities in England (based on the nationally recognised Heartbeat Award) and the Department of Health is currently developing a new 'healthier food mark' for public sector catering operations. But none of these schemes include a direct financial incentive. In the US, a scheme to provide government 'rewards' to employers who develop wellness programmes in the workplace (including activities around healthy eating) is currently being discussed by Congress.

- An 'advertising tax' on the advertising and promotion of high fat, sugar and salt foods could penalise advertisers and thus make advertising a less financially attractive option. It would also be possible to reward advertisers for advertising healthier options. There is a quasi-example of such a tax in France, although the tax itself is a penalty for non-compliance with legislation on the use of health messages on advertising, rather than an overall tax.

Recommendations

In the public discourse, food taxes are the only widely discussed financial (dis)incentive to promote healthy eating. But there are many other possible financial (dis)incentives that could encourage healthier diets – and their use is increasing. Many have been tried and tested by the public and private sectors in different settings the national and local level, and some have been shown to work. But these incentives have not yet been placed into a coherent policy strategy. This state of affairs, and the evidence collated in this report, leads to the following 15 recommendations.

General stakeholder-oriented recommendations

(1) The Department of Health and the devolved UK governments (in conjunction with the Food Standards Agency (FSA) where appropriate) should develop a clear strategy on financial incentives to encourage healthy eating. This is warranted by the increasing interest, use and evidence of financial incentives and disincentives to promote healthy eating. To inform such a strategy, they should collect the available evidence on the effect of financial incentives implemented by local health authorities and Primary Care Trusts (PCTs) (e.g. as part of Department of Health-supported 5-A-Day initiative), as well as their own national schemes. They should also consider developing a Healthy Incentives Pilot based on the funding initiative just starting in the US.

(2) Private actors have a key role to play in developing and implementing incentive schemes. Food and health providers should apply their marketing skills to designing incentive schemes to encourage healthy eating, and test and make available the results of these schemes.

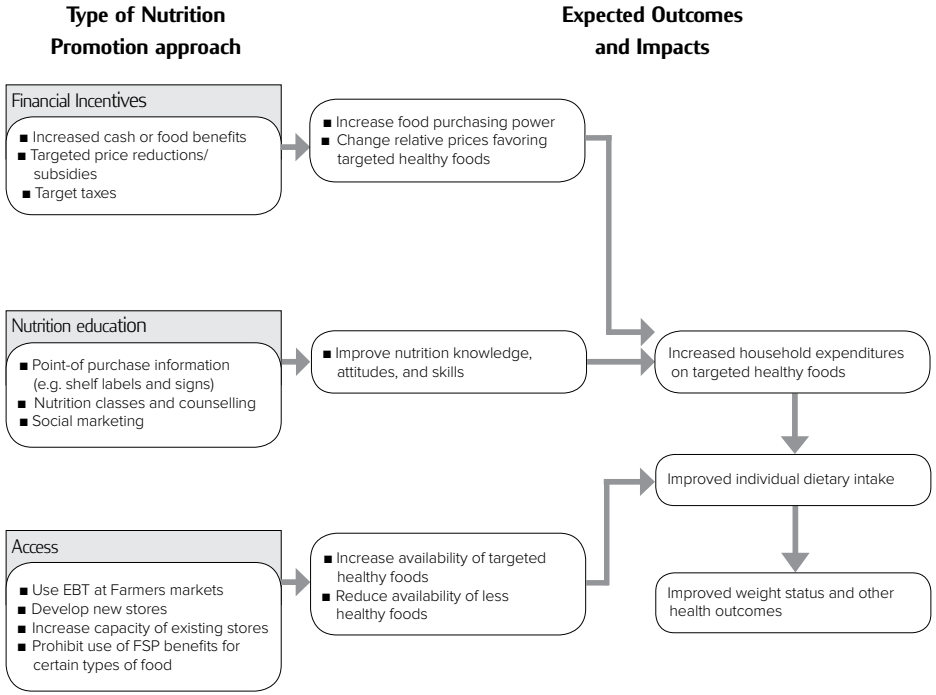
(3) The research community should actively engage in evaluating ongoing and future financial incentive schemes, as well as playing a role in designing pilots. This is particularly important because the evidence shows that some incentives work well in some contexts, but not in others, highlighting the importance of appropriate design and evaluation.

(4) Non-governmental organisations involved in health, consumer, family and community issues can also play a role at a national or local level in developing, implementing, communicating and/or evaluating financial incentive schemes.

General recommendations on implementation

(5) The evidence suggests that financial incentive schemes are most effective when implemented as part of an integrated package of mutually-reinforcing activities, such as education, marketing or modelling. This is also a conclusion of a recent review of financial incentives in the US, which conceptualised the role of such incentives as being part of three pillars: access to food; education

Figure 1 **Theoretical relationships between financial incentives, nutrition education, and food access, as conceptualised in the context of the SNAP (food stamp) programme in the United States**



EBT = Electronic Benefit Transfer;
FWP = Food Stamp Program.

Source:
GAO (United States Government Accountability Office). *Food Stamp Program: Options for Delivering Financial Incentives to Participants for Purchasing Targeted Foods*. Report to the Chairman, Committee on Agriculture, Nutrition, and Forestry, U.S. Senate. Washington DC, United States Government Accountability Office (GAO), July 2008.

about food; and incentives to consume the food (Figure 1). It is thus recommended that financial incentives are viewed as a tool to help stimulate or reinforce healthy eating as part of a broader package of activities, rather than being implemented in isolation. Similarly, it is recommended that financial incentives are considered as a reinforcing measure to existing healthy eating initiatives, such as the new school food standards.

(6) To be successful, financial incentive schemes need to take local contexts into account. This may well imply, for public-led incentives at least, that a local body is best equipped to implement such initiatives. As already highlighted, some incentives may work in some places or for some people, but not for others.

(7) Careful consideration should be given to which types of incentives would be best developed and/or implemented by public or private actors. Appropriate roles and responsibilities for each actor should be clearly defined for different types of incentive.

Recommendations specific to different incentives

(8) It has not yet been established whether food taxes would be an effective way to encourage healthy eating, and the funding situation in the UK does not seem to warrant the use of food taxes to raise revenue for obesity prevention efforts. Given this situation, it is recommended that efforts in this area focus on the full range of possible financial incentives beyond food taxes.

(9) Food taxes also represent a form of financial disincentive. Disincentives have been far less widely used than incentives, and the energy and commitment-building in this area concerns financial incentives. In general, then, it is recommended that efforts in this area build on this existing positive energy and focus on incentives rather than disincentives.

(10) The evidence suggests that price promotions could be successfully used to encourage consumption of more nutritious foods, but only if very carefully designed. Commercial know-how is needed to make these promotions effective. It is thus recommended that price promotions to encourage healthy eating by retailers be developed and implemented by the private sector, with the government playing a role by creating an incentive for the private sector to shift their entire promotional environment towards healthier eating.

(11) In discrete environments, shifting the entire pricing structure of vending machine contents and cafeteria meals has been shown to influence consumption, but the number of 'real world' examples (rather than research studies) is small and come from the US. This approach should be tested in different types of public and private sector settings in the UK. These pilots should also test whether price restructuring could be implemented in an economically viable way, or whether such approaches would always need external funding.

(12) Replacing value pricing with portion size pricing is not an incentive that has been adequately tested as a means of encouraging the selection of smaller portion sizes by consumers. In theory, governments could implement such an approach indirectly by taxing ingredients of products, thus reducing the incentive for food companies to implement value pricing. But it would be more straightforward for the food industry to implement on a voluntary basis. It is thus recommended that members of the food industry pilot this approach in conjunction with public sector researchers to test its feasibility and effectiveness.

(13) Evidence suggests, especially from the US, that vouchers have real potential to encourage healthier eating. Voucher schemes are also ripe for local application, tailored to local populations who are generally more difficult to reach with healthy eating messages. Given their own national schemes, the Department of Health and the devolved UK governments (in conjunction with the FSA where appropriate) should collate the evidence on voucher schemes, and, if the evidence shows they can work, develop national recommendations and good practice examples based on the evidence.

(14) Financial rewards have been particularly used to encourage healthier eating among children. Concern about the use of such schemes is warranted on the basis that 'bribing' children with rewards for eating has long been discouraged by psychologists. But some of these programmes are clearly working for fruit and vegetables and school meals. It is thus recommended that the role of rewards in fruit and vegetable consumption among children and school meal uptake be carefully considered for wider application.

(15) Providing food and health service providers with incentives is a very different type of financial incentive to consumer-targeted incentives. In many ways, provider-targeted incentives are different enough to be considered an entirely separate issue. But the evidence in this report suggests they have potential to influence food and health service provider behaviour in the 'supply chain'. Moreover, they can be used to create incentives for providers to develop and/or adopt financial incentives targeted at consumers. It is thus recommended that the creation of incentives for providers is considered in regard to how they can encourage the development and adoption of consumer-targeted incentives. In addition, financial incentives for providers to encourage healthy eating should be subject to the development of a separate strategy. Such a strategy could also consider incentives of a non-financial nature.

1. Introduction

Financial incentives are rewards of monetary value that aim to induce improvements in people's behaviour. Financial disincentives are penalties of monetary value that likewise aim to induce improvements in people's behaviour. Both financial incentives and disincentives are part of everyday life for workers and consumers. They are used widely in the workplace in the form of pay, bonuses etc., and consumers face them when they purchase goods. Financial incentives are also used as a form of public policy: General Practitioners (GPs) are, for example, provided with financial incentives to improve patient care and landowners to implement environmental programmes. Benefits for the unemployed are structured with the aim of not providing a financial disincentive to find work.

Financial incentives and disincentives are now increasingly being discussed as a means of encouraging healthier behaviours. The Public Health White Paper for England *Choosing Health* published by the Department of Health in 2004 identified incentives as a possible tool to encourage healthier behaviours, and said it would commission a systematic review of the evidence.[1] The subsequent *A systematic review of the evidence for incentive schemes to encourage positive health and other social behaviours in young people* was published by the Social Science Research Unit at the Institute of Education, University of London in 2006.[2] A year later the King's Fund published another review *Paying the Patient: Improving Health using Financial Incentives*.[3] In 2008, the government published its National Obesity Strategy for England *(Healthy Weight, Healthy Lives)*, which highlighted the potential role of financial incentives to reduce obesity, and promised to *"pilot and evaluate a range of different approaches to using personal financial incentives to encourage healthy living, such as individuals losing weight and sustaining weight loss, eating more healthily or being consistently more physically active".*[4] Also in 2008, Wellcome Trust set up a Centre for the Study of Incentives in Health (CSI Health), based at King's College London.[5] And most recently, Health England published a further review *Incentives for Prevention* (2009).[6]

The proposition that financial incentives and disincentives have the potential to encourage healthier behaviours arises from basic economic logic: that people will be encouraged to take an action if it involves an economic gain (or perceived gain) of some form, and be discouraged from taking an action if it involves an economic loss (or perceived loss). As put by Marteau *et al: "in theory, they work on learning theory principles by providing an immediate reward for behaviours that usually provide health gains in the longer term. They also capitalise on 'present bias,' a tendency for many of us to pursue smaller immediate rewards instead of rewards that are distant but more highly valued."*[7]

In light of this theory, financial incentives and disincentives have the potential to encourage healthier short-term behaviours to accrue long-term benefits, such as preventing tobacco use, excessive alcohol consumption, and obesity. It is notable that the most current policy debates in the UK on tobacco and alcohol both involve financial incentives. Government proposals to restrict point-of-sale display of tobacco products would prevent tobacco companies from providing financial incentives to retailers to display their products in prominent locations; the recent proposals by the Chief Medical Officer (England) and the Scottish government to raise the minimum price of alcohol would increase the financial disincentive for consumers to purchase alcohol. But beyond the widely debated food taxes, the use of financial mechanisms to encourage healthier diets has not been a visible part of the policy debate about healthy eating and obesity in the United Kingdom (UK).

Yet it is clear that there are many forms of financial incentives and disincentives that could be used to encourage healthier diets. Two recent (not comprehensive) reviews of the academic literature on financial incentives to encourage healthy eating identify several schemes in place in the United States (US).[8] A third review identifies financial incentives for weight loss that involve healthier eating. And the above example from tobacco indicates that financial incentives and disincentives can be used to affect behaviour not just by influencing consumers directly, but indirectly through the supply or marketing of the consumer product. It is, moreover, timely to give greater consideration to financial incentives and disincentives given the current economic climate; food choices and related health behaviours are more likely to be influenced by financial considerations when consumers are more concerned about their personal finances.

This report identifies and exemplifies the different types of financial incentives that could be applied to help consumers make healthier food choices. It identifies possible types of financial incentives and disincentives and categorises them into a conceptual framework. It then presents the rationale for each of the types of incentives, provides a series of examples, and examines the evidence of their effects. The report ends with a series of recommendations.

The method used to identify the examples and evidence presented in this report was a desk search combined with telephone and e-mail interviews with programme managers. A search was conducted of: (1) existing reviews on financial incentives for health; (2) databases of peer-reviewed journals; and (3) web-based information sources from public and private sector bodies. The search aimed to identify a range of examples of different financial incentives, but did not aim to be comprehensive, given the range of local and undocumented examples. Particular effort was made to identify examples at the local level from within the UK through web searches and telephone calls. Efforts were also made to identify examples from the US, where historically the use of financial incentives has been much more widespread. Wider international evidence was drawn upon when in the academic literature. Particular emphasis was placed on identifying examples with evidence of their effects; evidence was also identified from incentives that do not have the direct intention of encouraging healthy eating (e.g. existing food taxes implemented for fiscal reasons; sales promotions in a commercial setting).

The search focused on healthy eating, but examples and experiences elsewhere in the health sector, such as tobacco, alcohol, physical activity and obesity treatment, were looked to as a means of identifying the types of financial incentives and disincentives that could be applied to healthy eating, and to explain the rationale for why they might be applicable. These examples were not, however, drawn upon to provide evidence that their application to healthy eating would work. This is in light of a key finding of existing reviews on the subject: that financial incentives "*are effective at improving some health behaviours, but ineffective for others*" [9] and "*are effective in limited circumstances where the tasks are simple and time limited, and less effective where the behaviour change required is complex*."[10] This suggests that the effects of financial incentives are context specific, and there is thus limited scope for learning from incentives applied to other behaviours.

Table 1 **Conceptualising types of financial incentives and disincentives to encourage healthy eating**

	Consumer behaviour	Behaviour of food and health service providers
Food prices	■ Food taxes ■ Price promotions ■ Price restructuring in a discrete environment ■ Portion size pricing	■ Not applicable
Subsidies	■ Food vouchers ■ Vouchers for educational activities and programmes for healthy eating	■ Subsidising agricultural producers ■ Subsidising retailers ■ Subsidising meal providers
Financial rewards and penalties	■ Rewards for purchasing/ consuming nutritious foods ■ Rewards for educational activities and programmes for healthy eating	■ Rewards for educational activities and programmes for healthy eating ■ Rewards and penalties for food advertisers

2. Conceptual framework of financial incentives and disincentives for healthy eating

There are many different types of financial incentives and disincentives. While all behaviour-focused financial incentives aim to alter consumer behaviour in some way, they vary with regard to who they affect, what they affect, and the form they take. There are two important distinctions here.

- *The direct target*. There are two possible broad target groups for financial incentives and disincentives: consumers, or food and health service providers (including employers).

- *The category of incentive*. There are three broad categories of financial incentive: altering food prices directly; subsiding the cost of food or healthy behaviours; and providing financial rewards or penalties.

It can thus be conceptualised that through a combination of these key categories, there are:

- (Dis)incentives that aim to directly influence consumer behaviour through:
  - Affecting food prices directly;
  - Subsidising the cost of foods or related behaviours;
  - Financial rewards and penalties for eating nutritious foods or avoiding less healthy foods, and related behaviours.

- (Dis)incentives that aim to influence food and health service providers
  - Subsiding the production and/or provision of food;
  - Financial rewards and penalties.

  (There is no food price category for provider-targeted incentives since they do not target prices directly, albeit they have implications for final food prices.)

Within these categories, there are several different forms of incentive. On the consumer side these are, for food prices: food taxes, price promotions, price restructuring in a discrete environment and portion size pricing; for subsidies: food vouchers and vouchers for healthy-eating related activities; and, for financial rewards and penalties: rewards for purchasing/consuming nutritious foods and rewards for educational activities and programmes for healthy eating. On the provider side, these are rewards for healthy food provision, rewards for healthy eating related activities and rewards and penalties for advertisers.

These differing categories and forms of financial incentives are placed into a framework in Table 1.

There are three further important distinctions:

- Stakeholders. Incentives can be implemented through government regulation or guidelines, on a voluntary basis by the private sector, or by academic researchers conducting experimental pilots, or a combination of these stakeholders.

- Scale. Incentives can be put into place at a very local setting – a few schools or shops, for example, or could be part of a nationwide scheme. For example, they could be implemented by a nationwide food company or retailer or an independent local store, the Department of Health or a local authority or Primary Care Trust (PCT).

- Setting. For example, retailer, worksite, restaurant or school.

Table 2 **Full list of implemented financial incentive and disincentives to encourage healthy eating identified in this review**[a]

Target	Type	Example	Eval[b]	Lead[c]
CONSUMERS	**Food Prices**			
	Food Taxes	National food tax on select items in French Polynesia		G
	Food promotions	Buywell price promotion, UK	F	R
		Supermarket Health Options Project, NZ	F[d]	R
		Co-op; Tesco and Sainsbury's price promotion policies, UK		P
	Price restructuring	Deli-restaurant pricing study, US	F	R
		University of Minnesota cafeteria pricing studies, US	F	R
		Harvard University cafeteria pricing, US	F	R
		CHIPS vending machine pricing, US	F	R
		Firsthealth hospital café trial, US	INF	P
	Portion size pricing	Experimental trial by University of Minnesota, US	F	R
	Subsidies			
	Food vouchers	Healthy Start, UK		G
		Sefton Fruit & Veg Voucher Project , UK	INF	G
		Vouchers for pregnant women study, Wales	F	R
		Healthy Incentives Pilot, United States Department of Agriculture[e]		G
		Fruit & vegetable vouchers in WIC program, US	F	G
		Farmers Market Nutrition Program, US	F	G
		Health Bucks, New York City, US		G
	Vouchers for healthy eating activities	PruHealth Vitality programme, UK (also see rewards below)		P
	Vouchers for healthy eating activities			
	Food rewards	Fuelzone, Glasgow, UK	F	G
		Get Stuck in, East Ayshire, UK	INF	G
		Food Dudes, Ireland and UK	F	R/G
		Simon and Sinita, East Sussex UK	INF	G
		Kids' Corner and Collectible Card initiative, East Sussex, UK		G
		Sainsbury's supermarkets reward schemes for fruits and vegetables		P
	Educational/ programme rewards	My School Lunch, 27 local authorities, UK		G
		Healthy Incentives Programme, Birmingham East and North NHS PCT[e]		G/NGO
		Weight loss programmes, North America	F	R
		Workplace wellness schemes, worldwide	INF	P
PROVIDERS	**Subsidies**			
	Subsiding food production	No examples		
	Subsiding food retail	Community food co-operative programme, Wales and West Cumbria		G
		Community Food Enterprise, Newham	F	G
		Healthy Living Programme, Scotland, England	INF	G
		Fresh Food Financing, Pennsylvania, US		G
	Subsiding meal providers	School meal programmes, worldwide		G
	Financial rewards			
	Rewards to food providers	Heartbeat Award, UK[f]	F	G
	Rewards for healthy-eating related activities	None identified		
	Penalty for advertising and promotion	Advertising tax as a penalty, France	F	G

a Not including (dic)incentives not intended to promote healthy eating;

b = whether the programme has been evaluated:
F = formally evaluated,
INF = informally evaluated;
blank = not evaluated;

c = lead implementer of the scheme:
G = government:
P = private sector;
R = research community
NGO = NGO;

d Results not available

e Currently being piloted;

f Only a quasi-example since it does not provide financial reward

3. Examples and evidence for financial incentives and disincentives

3.1 Overview

This review identified around 35 examples of financial incentives and disincentives that have been implemented to encourage healthy eating (Table 2). Most came from the UK, but many came from the US, and, to a lesser extent, other countries. As shown by Table 2, consumer-targeted incentives are more common, and roughly divided by those that manipulate food prices, subsidies and financial rewards. The majority of the examples identified were subject to some form of formal or informal evaluation. The majority (20 out of 35) were led and implemented by government bodies, with the rest being led by the private sector or researchers. The specific examples are now examined in more detail, starting with (dis)incentives that directly address consumer behaviour, and followed by those that affect provider behaviour.

3.2 Financial (dis)incentives that directly target consumers

3.2.1 Food prices

3.2.1.1 Food taxes

Rationale

Food taxes aim to permanently reshape the food price environment. It has been proposed that there are two mechanisms through which food taxes could be used to promote healthy eating. First, by changing the prices of high fat, sugar, salt foods relative to more nutritious alternatives; second, by raising revenue for health promotion.

Table 3 **Food consumption taxes in European Union countries**

Belgium, Germany, Ireland, Italy and the UK	Lower rate of VAT is applied to tea, coffee and milk and a higher rate on soft drinks.
Spain, Ireland, Italy and Luxembourg	Super-reduced VAT (less that 5%) on food products, with Luxembourg extending this to soft drinks.
Ireland	A zero rate is applied for food and drink for human consumption, although this excludes soft drinks, ice cream and confectionery.
United Kingdom	Food is zero rated but certain foods are excluded, including soft drinks, ice cream, chocolates and pre-cooked dishes.
Cyprus	Zero rates food, excluding soft drinks, ice cream, chocolate, confectionery, biscuits and savoury products.
Malta	Zero rates food, excluding pre-cooked products, ice cream and soft drinks.

Sources:
Facts and Figures: Taxation Rates. Brussels: National Non-alcoholic Beverages Associations of the European Union (UNESDA) & Confederation of International Soft Drinks Associations (CISDA), 2004. ; *VAT Rates Applied in the Member States of the European Community* (situation at 1st May 2003). Brussels: European Commission Directorate-General Taxation and Customs Union, 2003; *VAT Rates Applied in the Member and Accession States of the European Community* (situation at 30 October 2003). Brussels: European Commission Directorate-General Taxation and Customs Union, 2003.

The impetus for taxing food comes from the experiences of taxing tobacco and raising the prices of alcohol. According to the World Health Organisation (WHO), increasing the price of tobacco through higher taxes is the single most effective way to decrease consumption and encourage tobacco users to quit.[11] Estimates suggest that a 70% increase in the price of tobacco could prevent up to a quarter of all smoking-related deaths worldwide.[12] Advocates also report that increasing tobacco taxes by 10% generally leads to increases in government tobacco tax revenues of nearly 7%.[13] Politically, tobacco taxation has been accepted as good policy by many governments around the world. In the UK, tobacco taxes make up 77.9% of the price of a packet of cigarettes.[14]

On alcohol, the price of alcohol has declined in the UK over past decades, while disposable household income has risen. Analysis shows that the decline in price has mirrored increasing consumption. Competition between sellers of alcohol has also had the effect of driving the price of alcoholic drinks down through extended promotions, buy-one-get-one-free offers, deep discounting and below-cost selling. A recent review of studies looking at the effects of price changes on alcohol consumption in the UK revealed that alcohol consumption is frequently influenced by price.[15] There is thus a large advocacy effort to increase the price of alcohol through taxation.

It has been widely, and contentiously, suggested that such taxes should be applied to food. Most recently, and particularly in the US, the case has been made for taxes on soft drinks. A recent article in the *New England Journal of Medicine* summarises the public policy case for soft drink taxation, citing evidence that for every 10% increase in price, consumption decreases by 7.8%. They also cite evidence that a penny-per-ounce excise tax would raise an estimated $1.2 billion in New York State alone.[16] This follows from a proposed bill in New York States that would have imposed an 18% tax on sugared beverages, with no tax on 'diet' drinks. Although it was included in the original State budget for 2008 and strongly supported by the State's Governor[17], it was removed from the final version following vigorous debate. Other States in the US are also reported to be considering the option.[18]

Food is already subject to taxes in the UK and other countries around the world. But these are part of general 'consumption taxes', not for health promotion. Consumption taxes are direct taxes on consumer spending, and include value-added taxes (VAT), goods and service taxes (GST) and sales taxes. Food is often exempt from these taxes because it is viewed as an essential commodity. But is not uncommon for 'non-essential' foods to be subject to some form of consumption tax. In the European (EU), VAT is applied differentially to food items, with countries having between one and three tax rates; the higher tax rate is usually applied to sweetened, processed foods (Table 3). In Australia, the GST (introduced in 2000) excludes 'basic' foods, but includes 'carve-out' foods, such as fast food, savoury snacks and ice cream.[19] In the US, 40 States impose sales taxes on at least one of soft drinks, candy, or snack items. For example, 34 States apply sales taxes to soft drinks, 30 States sweets, and 15 potato crisps.[20] In Canada, food is excluded from the GST.

Examples and evidence of effects

Several different types of food taxes have been proposed:

- 'Fat tax' or 'sugar tax': tax fat or sugars as proportion of food content;
- 'Calorie tax': tax on energy dense food;
- 'Junk food tax': tax soft drinks, snacks, etc;
- 'Luxury tax' on non-essential foods;
- 'Food advertising tax': tax on advertising of 'less healthy' foods;
- 'Fat people tax': tax on excess body weight.

Several studies have examined the potential effect of such food taxes on consumer behaviour; others have developed theoretical models based on potential taxation scenarios. These studies,which have mainly been conducted over the past five years, yield differing results, as summarised as follows:

- In California, it has been reported that when an 8.25% snack tax was implemented in 1991, snack sales fell an estimated 10%.[21] Initial price elasticity – a measure of consumer response to price changes – was high (-1.21), indicating demand was sensitive to small increases in price.
- A report by the Institute of Fiscal Studies found through modelling that extending the VAT in the UK to a wider range of fatty, sugary foods would reduce consumption by 10%.[22] The poor would be disproportionately affected, making the tax regressive. The authors thus concluded that the use of 'fat taxes' based on the amount of fat used in a product, would be regressive, costing those on lower incomes more.
- Another study examined the potential effects of extending VAT to a wider range of foods in the UK, using a model based on consumption data and elasticity values. It found that taxing only principal sources of dietary saturated fat is unlikely to reduce the incidence of cardiovascular disease, because the reduction in saturated fat is offset by a rise in salt consumption; taxing unhealthy foods defined by nutrient score might avert around 2,300 deaths per annum, primarily by reducing salt intake; while taxing a wider range of foods could avert up 3,200 cardiovascular deaths in the UK per annum (a 1.7% reduction).[23]

- In the US, researchers found that relatively low tax rates on snack foods of 1 cent per pound, and 1% of value would not appreciably alter consumption - and, thus, would have little effect on diet quality or health outcomes - but would generate $40-$100 million in tax revenues.[24]

- An analysis in Canada indicated that the low price elasticity of many food items means that 'fat taxes' may be a good way to raise revenue for health promotion activities or other social goals, but would only have substantial impacts on diets if the price changes are large. Furthermore, any new taxes on food would be necessarily regressive, in that the largest relative impact will be on lower-income consumers. Fat taxes may also be difficult to target, possibly in ways that would lead to negative outcomes.[25]

- Using data from Denmark, economists examined the nutritional effects of a food tax levied either directly on nutrients or indirectly through taxes on food commodities. It found that taxes would affect diet, especially in social classes 4 and 5.[26]

- A recent review of the evidence of how taxes might affect obesity concluded that small taxes or subsidies are not likely to produce significant changes in Body Mass Index (BMI) or obesity prevalence, but non-trivial pricing interventions may have some measurable effects on Americans' weight outcomes, particularly for children and adolescents, low-socieconomic status populations, and those most at risk for overweight. Additional research is needed to be able to draw strong policy conclusions regarding the effectiveness of fiscal-pricing interventions aimed at reducing obesity.[27]

Just one food tax actually implemented for health purposes was identified. In 2002, the government of the small Pacific Island of French Polynesia imposed a tax on alcohol, soft drinks, ice cream, chocolate, and sweets. The purpose was to raise funds for a Prevention Fund managed by the *Etablissement pour la prevention* (EPAP) an interdepartmental government organisation responsible for a range of public health programmes. The tax is reported to have raised 1.8 billion French Polynesian Francs in the first year of operation (2002). Today, only part of the tax is earmarked for the EPAP Prevention Fund, with the rest allocated to general revenue. The money raised from the fund has been allocated to a wide range of health promotion projects, including obesity prevention.[28]

Another country that imposes a tax earmarked for health promotion is Thailand, but the tax is only on tobacco and alcohol. The producers of both products have to pay a 2% extra excise duty stamp, which is used directly to fund a health promotion foundation ThaiHealth.[29] The tax provides ThaiHealth with annual revenue of about US$35 million.[30] The foundation is very active and involved in many programmes, including those to promote healthy diets.

3.2.1.2 Price promotions

Rationale

Price promotions can take the form of discounts (e.g. 20% off) and extra-product promotions (e.g. two for the price of one, or buy-one-get-one free). The commercial rationale for such promotions, which are used widely by food manufacturers and retailers, is that they create an incentive to encourage consumers to purchase a product more quickly, more frequently, and/or in greater quantities than in the absence of the promotion. In the UK, a series of reports by the National Consumer Council (now Consumer Focus) has surveyed price promotions in British supermarkets. In 2008, out of 4,300 promotions at the leading eight supermarkets, 54% were for foods high in fat, sugar or salt, compared with 12% for fruit and vegetables.[31]

Price promotions work by providing a basic economic incentive to consumers. They have the potential to impact eating patterns by reducing the price of some foods relative to others. Even if the price cuts are not significant, they may give the impression of lower prices relative to similar foods in the same outlet, the same foods in different outlets, or the same food product at a previous time – thus creating the perception of 'good value'.

Price promotions can be implemented in any setting where food is purchased, notably retailers. Potentially, price promotions by retailers to promote healthy eating could be very effective, given that, according to the global industry trade association, POPAI (The Global Association for Marketing at Retail), 70% of all purchasing decisions are made at point-of-purchase.[32] This has particular implications for the use of price promotions in supermarkets given they sell a large majority of groceries (in the UK, the top five supermarkets sold 69.3% of all groceries in 2007).[33] Other potential settings for price promotions include catering outlets and direct selling alternatives.

Examples and evidence of effects

Only one evaluated example of the effect of price promotions on healthy eating was identified in the UK. The scheme, Buywell, was developed by academic researchers (University of Stirling, Scotland) in conjunction with the retailer, The Co-operative Group (Co-op). It involved direct mailing price promotions to 37,034 Co-op customers; the promotion was thus not conducted in a retail setting, but the vouchers had to be used in a retail setting. The customers were drawn from a database of Co-op loyalty card holders defined as being: (1) low income; (2) regular customers who do most of their food shopping at the Co-op; and (3) buying a significant proportion of 'unhealthy' food items (this latter category was formulated by excluding customers who purchased over a certain amount of food items designated as green by the Food Standards Agency (FSA)'s traffic light labelling scheme). There were two types of price discounts: a recipe card for 'simple healthy meals', with

three money-off coupons for the main ingredients in the product (the meat product, any fresh vegetable, and a Co-op cook-in sauce); and six money-off coupons for skimmed and semi-skimmed milk, with just one voucher permitted per shopping trip to encourage repeat purchasing.

The effects of the programme were evaluated by the Institute of Social Marketing at the University of Stirling.[34] the effects on buying habits of the recipients of the discounts were compared against a control group of 16,333 customers. It found that the discounts encouraged a 3-5% increase of the customer base for five of the six promoted products. Uptake was limited to the period of the promotion (7-28 May, 2007), and to the widening of the customer base, rather than increased purchasing by existing buyers. An accompanying questionnaire to 3,706 of the sample found that a higher proportion of eaters who consider themselves 'healthy' reported receiving and using the coupons.

The only other study of health-led price discounting in a retail setting with public involvement was identified in New Zealand. The Supermarket Healthy Options Project (SHOP) is being led by researchers at the Clinical Trials Research Unit at the University of Auckland. SHOP introduces two interventions: price discounts on healthy foods and individualised nutrition education.[35] The study, which is still being completed, measured the effect discounts had on food shopping habits, the outcome being the macronutrient content of purchased supermarket food and on the purchase of specific food items (e.g. fruit and vegetables). The study randomised a total of 1,104 shoppers who shopped at one of eight participating supermarket stores across the lower North Island of New Zealand.[36] The study intervention lasted six months, with an additional six months to determine the sustained impact of the study interventions. Electronic data on food purchases were collected over the full 12-month period using a handheld barcode scanner system (a previous study demonstrated the feasibility of conducting a large randomised controlled trial of strategies to promote healthier supermarket food purchases).[37] Data collection was completed in February 2009 and analyses are underway; the results will be published later in 2009.[38]

A review of the health and nutrition activities of leading retailers in the UK also identified examples from the private sector. Many retailers in the UK conduct price promotions on nutritious food items. According to a review by the British Retail Consortium (BRC): *"Fruit and vegetables, meat and fish and other foods that can form the basis of a healthy meal are promoted throughout the year. The half price promotions on fruit and vegetables that retailers have been running for some time are good examples of this. These promotions take place throughout the year, concentrating on different fruit and vegetables according to seasonality".*[39]

In addition, the BRC review reported that three leading retailers have specific policies on using price promotions to encourage healthy eating (rewards-style incentives may also be used as part of the same initiatives, see section 3.2.3.1)[40]:

- The Co-op has conducted a range of initiatives to promote fruit and vegetables over the past few years. The retailer has an ongoing campaign to 'mix your colours to get the most goodness out of your fruit and vegetables', supported by half-price deals that run all year. Sales of fruit and vegetables during this campaign increased by an average of 9%. In 2008, a promotion was also run for staff, entitling them to a 20% discount on all fruit and vegetables between 31 December 2007 and 27 January 2008.[41] In 2009, the Green Dot campaign was designed to bring attention to healthier food items, and provides double membership points on all green dot products (a rewards-based incentive) and offers key lines at half-price. Also in 2009, the Co-op began a Big 5 promotion programme with five different single price produce deals every month on top of the usual promotional lines. Significantly, too, the Co-op has pledged to ensure that 25% of all its price promotions are 'healthier products' (defined by the FSA's nutrient profiling model).

- Tesco ran over 200 promotions on fresh produce, fish, whole foods and Healthy Living products in 2007 in the UK. In what they term their 'fruit and vegetable pledge,' Tesco set a target for 2007 to have five half-price offers on fruit and vegetables every week in 500 UK stores.[42] In that year, they ran an average 23 half-price offers per week in 742 stores, which contributed to a growth in sales of fruit and vegetables of 8%. In 2008, Tesco Ireland ran a 25% price promotion on their Tesco Free From range, Wholefoods range, Organic range, Superfoods range and Tesco Vitamin & Mineral range. The campaign was supported by in-store tastings and in-store customer information leaflets promoting healthy eating and a more active lifestyle.[43]

- Sainsbury's run constant price promotions on produce with an average of five half-price offers each week. On average a minimum of 30% of their fresh produce is sold on promotion.

Detailed data on the effects of retailer price promotions are not in the public domain. However, scanner data obtained from the commercial sector has been examined in the economics research literature to evaluate the impacts of price promotions on food sales. Although these studies do not evaluate the impact on healthy eating, the results nevertheless have some interesting implications for promotions to promote healthy eating. The studies show that price cuts can influence consumption patterns by influencing the purchasing choices of consumers and encouraging them to eat more.[44] Some studies suggest that around 60% of the sales increases resulting from price promotions are because consumers are consuming more of the product. But because of the effect of 'brand-switching' (when consumers switch brands to take advantage of the price promotion but do not actually change the amount they consume), 'forward buying' (when consumers buy more of the product during the promotion and store it for a longer period of time rather than consuming it faster), and 'store switching' (when consumers buy the promoted product in the store with the promotions as opposed to their usual place of purchase), price promotions may at times have no impact at all on overall consumption. The effect depends on the nature of the price promotion, the consumer, and the food product. Generally, the

effect is greater the deeper the discount, and for consumers who are more 'deal prone' (a characteristic that does not necessarily equate with socioeconomic status).

There are no hard and fast rules on how different foods are affected by price promotions. Some research has found that perishable products are more likely to be affected because once the product is purchased it must be eaten within a time-limited period. But others have suggested that storable products are more likely to be affected, the rationale being that people are more likely to respond to promotions for storable products since they know they can store them for longer, but then, because the product is more convenient and salient, they end up consuming it faster anyway. It has also been proposed that foods that are more 'convenient' and 'desirable' are consumed faster as a result of price promotions because once in the home, consuming the food is easy – and the price promotion gives the consumer an 'excuse' to consume more.

Another important aspect of price promotions is that they can bring attention to new products. A study in India, for example, found that early adopters of new products tend to be more responsive to sales promotions.[45] A recent survey conducted by the Institute of Grocery Distribution in the UK found that 25% of those interviewed identified buy-one-get-one-free offers as particularly effective in encouraging them to purchase a new brand. Consumers also said that these promotions were most likely to influence sales of non-perishable products; for fresh products like fruit and vegetables, consumers said they would be more likely influenced by overall lower prices.[46]

3.2.1.3 Restructuring prices in a discrete setting

Rationale

Many people consume their main meals in specific catering settings, such as schools, universities, worksites and hospitals. These environments are relatively controllable environments where other choices are relatively few (compared, say, with a large supermarket), where the intervention can be studied and evaluated relatively easily, and where positive reinforcements can be added. Other channels of food provision, such as vending machines and direct selling, also present discrete settings in which prices can be restructured. In such environments, prices could be restructured permanently – rather than temporarily as in the case of price promotions – to promote healthy eating.

Examples and evidence of effects

No examples of price restructuring to promote healthy eating could be identified in the UK. But six peer-reviewed, evaluated studies were identified from the US, four from catering settings and two from vending machines, along with one actually implemented price restructuring programme in a hospital setting.

The evaluated studies were designed and implemented by academic researchers. Because they are pilot research studies, the price restructuring was only implemented for a brief period, meaning that their effects may actually be akin to price promotions. The studies are as follows:

- *Delicatessen-style restaurant, 2002.*[47] In this experiment, prices of low fat food items (e.g. soup chicken sandwich, salad) were lowered in a delicatessen-style restaurant in a city of approximately 250,000 people. In some cases the decline was accompanied by a health message, and in others, a health message was used, but no price discount. Decreasing prices alone, and combining lower prices with a health message, prompted the greatest increase in sales.

- *High school cafeterias, 1997.*[48] This study, by a research team at the University of Minnesota, reduced the price of three targeted fruit and vegetables in cafeterias in two high schools by approximately 50% (fruit prices, baby carrots and salads). Signs indicating the reduction of prices were placed near the area where the items were sold. This led to a quadrupling of fruit sales and a doubling of carrot sales, but no change in salad sales during the intervention period.

- *University office building cafeteria, 1994.*[49] In another study by the University of Minnesota team, prices of fruit and salads were reduced by 50% for a three week period in a university office building cafeteria. The result was a threefold increase in fruit and salad sales. This dropped significantly after the period of the intervention, but remained significantly above the baseline rate

- *University cafeteria, 2008.*[50] The most recent example comes from a cafeteria at the Harvard University School of Public Health. In the intervention, the prices of foods defined as 'healthy' were reduced by 20% (the price cut was subsidised by the University). The intervention was accompanied by a promotion and led to an increase of consumption of healthy foods by 6% and a reduction of less healthy foods by 2%. After the promotion ceased consumption of healthy foods further climbed by 17%.

- *Vending machines in a university, 1997.*[51] In this study, the target was nine vending machines at four locations in a university setting. During a period of three weeks, prices of low fat foods in vending machines (less than or equal to 3g of fat per package) were reduced by 50%. During the price discount, sales of low-fat snacks increased by 127%, while sales of regular items fell slightly.

- *Vending machines in schools and worksites, 2001.*[52] Another vending machine study by the same research team – the CHIPS study – examined price reductions on low fat snacks in 55 vending machines in 12 secondary schools and 12 worksites. Three different price reductions were implemented in both settings, along with one case of promotional signage but no

discount. The study found that price reductions of 10%, 25%, and 50% were associated with increases in low-fat snack sales of 9%, 39%, and 93%, respectively. The promotional signs had a weak effect.

The example from the hospital setting is the Healthy Hospital Initiative of the North Carolina Prevention Partners (NCPP), a coalition focused on reducing preventable illness and early death in North Carolina caused by tobacco use, poor nutrition, physical inactivity and obesity. The initiative includes a healthy foods programme.[53] It consists of a five point plan for enhancing healthy food environments: (1) Adopt and implement Healthy Food Nutrition Criteria; (2) Use Pricing Structure to Incentivize Customers to Purchase Healthy Items; (3) Use Marketing Techniques to Promote Healthy Foods; (4) Use Benefit Design and/or Wellness Incentives to Encourage Behavior Change; and (5) Implement Education Campaign to Promote the Healthy Food Environment with Staff and Visitors.[54] The programme was launched in September 2008 by three of the State's largest hospital systems. Thus far, pricing strategies are the least used out of all the five points: in September 2008, less than a quarter of hospitals had tried making healthier options cheaper and/or raised the price of less healthy options.[55] However, there has been one reported success story in which FirstHealth hospitals modified their pricing structure in their cafeterias to encourage healthy eating. According to information on the website *"After the price change went into effect, there was an immediate shift in purchasing behavior. Within a three months time frame, fried chicken sales dropped by 74% while grilled chicken purchasing increased by 42%. Salad bar consumption increased by 1,024 pounds! They noticed that they did not have to remove traditional foods and that people prefer the healthier, more cost-effective options."*[56]

3.2.1.4 Portion size pricing

Rationale

One of the issues often raised in the context of rising obesity in the UK is increasing portion size. 'Supersizing' of portions – such as snacks and fast foods – has become commonplace. In what is termed 'value pricing', the relative price of larger portions is lower, i.e. product prices are structured so that the per unit cost (e.g. price per gram) decreases as portion size increases, so that larger portions represent value for money. There is thus a financial incentive for consumers to buy more of the larger product. In light of growing concerns about obesity, it has been suggested that the food industry should stop this practice and increase prices at the same rate as increasing portion size (here termed portion size pricing), thus reducing the incentive for consumers to buy the larger size. The FSAis currently formulating policy on portion size control following an academic workshop in June 2008.[57] The participants of the FSA academic workshop noted that *"industry should promote smaller packs of the product and reduce economic incentives to buy more"*, and came to the overall conclusion that *"industry should avoid 'value-for-money' promotions which encourage increased consumption of energy dense, salty foods"*.[58]

Examples and evidence of effects

Just one example was found of removing value pricing in order to discourage consumers from selecting the larger sized product. The study, a pilot set up for academic investigation in the US, investigated whether the removal of value-pricing in a fast food restaurant would affect meal choices (the study also investigated the impact of calorie labelling).[59] It comprised a randomized 2 x 2 factorial experiment in which participants ordered a fast food meal from one of four menus that varied with respect to whether value size pricing was used. Study participants included 594 adolescents and adults who regularly ate at fast food restaurants. The study found that removing value pricing made no difference to the energy composition of meals ordered or eaten. However, the study authors stated that the study had several weaknesses that could explain this finding: *"The price shifts we evaluated tended to be smaller in magnitude compared to those evaluated in previous studies, which could explain why our results conflict with previous findings. It is also possible that the null results are due to the study design which provided only one exposure to the price modification. When queried regarding whether they had noticed the modified pricing structure, less than one-fifth responded affirmatively. Since most fast food restaurant chains utilize a value size price structure, it is possible that study participants generally assumed the larger sized items were the better value without considering the prices listed on the menu. In consideration of this potential methodological issue, future studies designed to evaluate value size pricing should ensure repeated exposure to price modification."*

A review of food industry commitments on portion sizes (in the commitments database of the EU Platform on Diet, Physical Activity and Health) did not identify any examples of companies removing value pricing. For example, Mars Inc has a portion size reduction programme to reduce calorie intake per portion. In 2008, it reported that it reduced bar weight by 7% on average, and introduced smaller options into major brands.[60] It changed 'Kingsize' to 'Duo packs' (i.e. dividing the Kingsize into two in one pack), and introduced 'Bite Size' snack portions. But, from the information available, there was no effort to increase the cost of the larger sizes and vice versa.

3.2.2 Subsidies

3.2.2.1 Food vouchers

Rationale

Subsidies do not manipulate food prices directly, but effectively reduce prices by providing consumers a means of purchasing foods at lower cost. Vouchers (or 'coupons') are notably different from measures that target food prices directly, because they are provided direct to consumers before they enter a retail environment. Subsidies can thus be used in a more targeted manner, such as being provided to consumers in specified income brackets, locations, household characteristics, etc. They can, of course, also be provided to entire populations.

Food vouchers are a key tool used to provide food subsidies. Vouchers can either provide discounts on the cost of specified foods, or be exchanged for foods free-of-charge. The recipients have the incentive to obtain the product because they can only use the vouchers for that purpose; if they do not use them, they go to waste. The incentive is thus provided by having the means to purchase something at a lower price (or no cost) that cannot be used for other means.

Examples and evidence of effects

There is one nationwide example of a food voucher scheme in the UK: Healthy Start, a just-initiated (April 2009) national coupon programme of the Department of Health.[61] The programme, which came into law on 6 April, 2009,[62] replaces the Welfare Food Programme. One key difference from the previous programme is that it aims to encourage fruit and vegetable consumption among low income groups.[63] Women who are pregnant or families with a child under four years old and are on certain benefits qualify for Healthy Start. All pregnant women under the age of 18 qualify - whether or not they are on benefits. These families are eligible for vouchers to spend on milk, fresh fruit, fresh vegetables and infant formula milk, but must apply for the coupon. Pregnant women and parents/carers of children aged over one and under-four receive one voucher per week, worth £3.10, for each child/pregnancy. Parents/carers of children under one year old receive two vouchers, worth a total of £6.20, for each child under one year old. Vouchers are normally issued in a set every four weeks. Each set has a use-by date so that they have to be used within a four-week period. Vouchers can be used at authorised retailers, including supermarkets, corner shops, food cooperatives, milkmen and market stalls. Retailers must register to be part of the programme.

Healthy Start has been piloted in Devon and Cornwall since November 2005. A qualitative evaluation conducted of the pilot scheme indicated there had been implementation challenges concerning training, participation by retailers, communication about the programme, and lost opportunities to build in with existing healthy eating campaigns.[64] But it was also reported that many families welcomed the new flexibility that Healthy Start vouchers offer. Retailers found the process of registration and claiming payment to be simple and straightforward. Health professionals understood how the scheme worked and were able to advise their clients appropriately. No evaluation of the programme has been conducted on its effects on fruit and vegetable intake.

Voucher programmes have also been introduced in the UK at a local level as part of the healthy living strategies of PCTs. The only such scheme for which comprehensive information could be identified was the Fruit and Vegetable Voucher Project run by NHS Sefton.[65] The scheme, a pilot, was supported by the Department of Health as part of its 5-A-Day Project initiatives. The pilot aimed to promote fruit and vegetable consumption, and support local business by making the vouchers redeemable at local greengrocers rather than supermarkets. It involved 50 families each receiving £5 worth of fruit and vegetable vouchers per week for a six-week period. The vouchers were designed to encourage repeat purchasing, so participants were given five £1 vouchers, only one of which could be redeemed at a time. Participants were also given an information booklet about the importance of eating fruit and vegetables and recipe cards. To make a record of the purchase, the greengrocer marked the token and returned it to the PCT for redemption. The vouchers were provided to target groups already in contact with community workers, such as pregnant women.

The project was evaluated by the PCT using the 5-A-Day evaluation tool developed by the Department of Health. This tool took the format of a questionnaire, the Five-A-Day Consumption and Evaluation Tool (FACET). The results are not in the public domain and were obtained direct from the PCT. The study, which included no control group, found that 93% of families reported eating more fruit and vegetables as a result of receiving the vouchers.[66] Before the intervention, 11% of the recipients reported consuming five vegetable per day; this rose to 47% after the intervention. 73% also reported an increased knowledge of the 5-A-Day message, and 83% reported that they would continue to increase the amount of fruit and vegetables consumption after the intervention.

Also identified was a voucher programme designed and implemented by researchers at Cardiff University. In the study, pregnant women in one of the most deprived communities in Wales were provided with vouchers exchangeable for fruit or fruit juice.[67] 190 pregnant women were allocated into one of three groups: usual care; provided with dietary advice; and given vouchers to exchange for fruit and fruit juice from a milk delivery firm. Women with the vouchers substantially increased their consumption of fruit juice, and serum beta-carotene concentration increased. Dietary advice had no effect. Frequency of fruit consumption declined in all groups.

Much larger-scale voucher schemes exist in the US. This reflects the general tradition in the US of providing benefits to low income groups in-kind rather than in cash. There are three core

programmes in the US that provide food vouchers to specific groups: the Supplemental Nutrition Assistance Program (SNAP, until 2008 known as 'Food Stamps'), the Special Supplemental Nutrition Program for Women, Infants and Children (WIC), and the WIC/Seniors Farmers Market Nutrition Program (FMNP). While none of these programmes are explicitly 'healthy eating' programmes (they originated as programmes to reduce food poverty), in recent years they have become more oriented towards healthy eating, through restructuring and additional add-on coupon programmes, some of which have been evaluated.

The SNAP programme provides benefits to low income families in the form of cash that must be spent on food; the benefit is provided on an electronic card ('Electronic Benefit Transfer', or EBT) that can be used at retailers and most farmers markets. It is the largest food assistance programme in the US, providing monthly benefits at a cost of $32.8 billion in 2006.[68] The programme has been criticised for encouraging unhealthy food choices and promoting obesity: food stamp recipients tend to increase food expenditures beyond what they would be in the absence of the benefit.[69] Longitudinal data shows that female food stamp recipients are more likely to be obese.[70] According to the United States Departments of Agriculture (USDA), which manages the programme, the new name reflects efforts to shift away from this and *"focus on nutrition and putting healthy food within reach for low income households."*[71]

In 2007, researchers at the USDA published a study of how the SNAP programme could be used to encourage healthier choices.[72] It concluded that financial incentives could be used to increase the nutritional benefits of the programme, stating that:

- Targeted price manipulation through bonuses or coupons for food stamp participants to purchase fruit and vegetables may be more successful than untargeted increases in food stamp benefits. Offering a bonus to purchase targeted foods essentially lowers the price of the foods. Estimations of low-income consumers' response to changes in the price of fruit and vegetables indicate that a 20% price reduction would raise fruit and vegetable consumption to 2.2 cups per day (an improvement, although still not meeting current Federal recommendations for typical adults).

- Restricting purchases of 'unhealthful' foods and beverages does not appear to be a promising strategy for dietary improvement. Policies that prohibit the use of food stamp benefits for purchasing specific foods, such as candy or soft drinks, may or may not limit purchase of foods. Most food stamp recipients use some of their own money as well as food stamp benefits to purchase foods and may simply change the mix of foods they purchase with cash versus food stamp benefits. Even if food stamp recipients stop buying prohibited items, given the diversity of food products available for sale and the ingenuity of the food industry to develop new ones (for example, a prohibited candy bar adapted into a chocolate 'granola bar'), many near substitutes are likely to be available. The consumer would still make the decision to choose either more healthful foods, such as fruit and vegetables, or foods and beverages that, although not restricted, are essentially similar to the prohibited items.

Following from this study, the 2008 Federal Farm Bill in the US provided $20 million for projects to *"provide incentives at the point of purchase to encourage households participating in the SNAP, to purchase fruits vegetables or other healthful foods."* The result is the Healthy Incentives Pilot of the USDA, which aims to determine if incentives provided to SNAP recipients at the point-of-sale would increase the purchase of fruit, vegetables or other healthful foods. A symposium to consult with partners, interested stakeholders and other experts, including representatives from academic and other research institutions, private industry, Federal and State governments, retailer associations and advocates, was held in October 2008. USDA used the information gathered at the symposium to help determine the design, implementation and evaluation criteria for the pilot. The pilot will issue a call for proposals for test projects in August 2009.[73]

The WIC programme provides supplemental foods, health care referrals, and nutrition education for low-income pregnant, breastfeeding, and non-breastfeeding postpartum women, and to infants and children up to the age of five who are found to be at nutritional risk. It served about 8 million people per month in 2004, about half of whom were children.[74] WIC participants receive checks or vouchers to purchase specified foods designed to supplement their diets each month. The WIC food package was revised in 2007 following concerns that the foods were not sufficiently nutritious. The new food packages align with the 2005 Dietary Guidelines for Americans and infant feeding practice guidelines of the American Academy of Pediatrics. The changes will be phased in between February 2008 and August 2009 by WIC State agencies. New York State became the first State to adopt the guidelines, and the effects will be evaluated by researchers.[75]

A recent pilot study in California provided recipients of the WIC programme with additional food coupons that could only be spent on fruit and vegetables. The study was evaluated by researchers. A total of 602 women enrolling for postpartum services at three selected WIC programme sites in Los Angeles were recruited. Sites were assigned to intervention with vouchers redeemable at a local supermarket, a nearby year-round farmers' market, and a control site with a minimal non-food incentive. Vouchers were issued bimonthly, at the level of US$10/week, and carried out for six months. Recipients of the vouchers increased their consumption of fruit and vegetables and sustained their increase six months after the intervention was terminated. Farmers' markets participants increased consumption by 1.4 servings per 1,000kcal of consumed foods, and supermarkets participants by 0.8 servings.[76]

The Farmers Market Nutrition Program (FMNP) was initiated as part of WIC to promote consumption of fruit and vegetables among WIC participants, while also supporting small

farmers. Eligible WIC participants are issued FMNP coupons (in addition to their regular WIC food instruments) that can only be used to purchase fresh fruit and vegetables at eligible farmers markets. During fiscal year 2007, 15,062 farmers, 3,217 farmers' markets and 2,371 roadside stands were authorized to accept FMNP coupons. Coupons redeemed through the FMNP resulted in over $20 million in revenue to farmers for fiscal year 2007.[77] There is also a Senior Farmers' Market Nutrition Program (SFMNP) especially for older people.

Three studies have also evaluated the use of coupons in the FMNP, although, unlike the WIC study in California, these studies did not actually examine the effect on dietary intake.

- *Project FRESH, 2001*.[78] In the study, 669 low income women were recruited from the WIC Program and another programme, the Community Action Agency Commodity Supplemental Food Program (CSFP) in the State of Michigan. Each was provided with a differing combination of nutrition education and FMNP coupons ($20, plus $10 for WIC participants and $5 for CSFP participants). The results showed that providing the coupons increased the likelihood that they visited the market and increased self-reported fruit and vegetable consumption, but it had no effect on attitudes (although nutrition education did).

- *Seniors Farmers' Market Nutrition Program (SFMNP) in South Carolina*.[79] In this evaluation, 658 people participating in the programme were surveyed through the mail and asked about the effect of the programme. The survey found that the coupons were popular with seniors. Specifically, of the 98% of respondents who used the vouchers, 531 respondents (89%) reported the intention to eat more fruit and vegetables year round because of the programme, although (83%) did not purchase foods that they had never tried before.

- *Seniors Farmers' Market Nutrition Program (SFMNP) in Seattle*.[80] Semi-structured interviews were performed with 27 participants in their homes to identify benefits and barriers they encountered and to measure their use and sense of satisfaction with the programme. It reported that some participants would not have had access to fresh fruit and vegetables without the programme.

A local example of a financial incentive to increase fruit and vegetable purchases at farmer's markets is the Health Bucks programme of the New York City Department of Health. 'Health Bucks' are $2 coupons distributed free of charge through local public health offices in low-income areas of the city. They can only be used for fruit and vegetables at farmers' markets. Health Bucks are also used as a financial reward (discussed further in section 3.2.3) for food stamp recipients: one Health Buck coupon is given to each customer for every $5 spent using food stamps.[81] The effect of Health Bucks has not been evaluated but uptake was high enough that the programme is now being expanded.[82]

3.2.2.2 Vouchers for educational activities and programmes for healthy eating

Rationale

The idea behind providing vouchers or discounts for educational activities and programmes for healthy eating is that it creates incentives for consumers to participate in the activity. Examples could include educational programmes, obtaining dietary advice, visits to health professionals to obtain a check-up etc. It is an approach that has been used for physical activity. For example, Asda, as part of its commitment to England's Change4Life programme, is providing free vouchers (from Asda stores or online) for free sports sessions for children during school holidays.[83]

Examples and evidence of effects

There appears to be no widespread use of vouchers and discounts to encourage healthy-eating-related activities. Rather, as discussed below in section 3.2.3, reward schemes are more likely to be used to encourage such activities.

The only example identified was from a programme that also utilises rewards: the Vitality programme of PruHealth, the private medical insurance company in the UK. Vitality is based on the precept that: *"We know from experience that the more effort someone makes to be healthy the less likely they are to claim on their health cover. We believe it's only fair then that the people who look after themselves in day-to-day life be rewarded. This is why we developed our unique Vitality programme."*[84] The programme provides discounts for health screening services that include advice on diet and nutrition, and also provides reward points (see section 3.2.3.2).

It is possible there are further examples of such approaches in the US, where private medical insurance is the norm. Owing to increasing costs, insurance companies are increasingly using financial incentives to encourage individuals to become more responsible for their health; thus far, these appear mainly to have used rewards-based incentives, as discussed in section 3.2.3.2.

3.2.3 Financial rewards or penalties

3.2.3.1 Rewards for purchasing/consuming nutritious foods

Rationale

Offering rewards in return for purchasing follows the same logic as price discounts and food vouchers: that they will encourage consumers to buy or consume more of the product. But they draw on a different aspect of consumer psychology: that behaviour followed by rewards (i.e. reinforced by rewards) is likely to be repeated, and that this behaviour becomes learned over time, even in the absence of such rewards. In theory, then, rewards encourage repeat purchasing and/or consumption. That this theory applies in practice is suggested by the extensive use of collectible-style promotions by the food industry, such as vouchers for prizes on cereal packets, toys with children's meals in fast food outlets, and loyalty card points in supermarkets. Along with encouraging repeat purchasing, reward-style promotions are used by the food industry to encourage consumers to try a food they have not tried before (the 'product testing' effect).

Financial rewards have been applied relatively widely in the US to encourage physical activity, tobacco cessation and weight loss (rewards that may also be linked with educational programmes, as described below in section 3.2.3.2). Several evaluations suggest that such rewards schemes can work. In one study, elders receiving cash bonuses for walking or jogging (with the amount increasing with more walking or jogging), increased their physical activity levels.[85] In another example specific to obesity, a recent randomized control trial in the US offered participants a financial incentive to lose weight. There were two types of incentives: participants either played a lottery and received the earnings if they achieved or lost more than the target weight; or received a deposit contract in which they invested their own money, losing it if they failed to achieve weight goals. The trial was successful over the short term.[86]

Rewards can be offered in any context where food is provided, including retail settings, where food is purchased, and catering settings, where food may be purchased or provided at no cost.

Examples and evidence of effects

There are two types of financial reward schemes for purchasing or consuming nutritious foods in the UK, both in schools. The first type was created to increase the uptake of school meals, the second, to increase consumption of fruit and vegetables.

The Fuel Zone programme was developed by Glasgow City Council with the aim of the increasing uptake of school meals, and of healthier choices within those meals. The concept was developed in Glasgow secondary schools in 1996 *"after a lengthy period of pupil consultation. At this time the school meals service was considered to be old-fashioned, drab and lacking any street credibility."*[87] The first phase of Fuel Zone saw the refurbishment of dining halls. Phase two concentrated on promotion of healthy eating, including the development of a web-based points reward scheme. The scheme started in 2004 and is ongoing. The programme involves allocating a certain number of points to 'healthy meal' items in school cafeterias; the healthier the item, the more points. The healthy menu range is reported to be in line with the Scottish Executive report on school nutrition standards, Hungry for Success (the programme is currently being updated to take account of the new nutritional standards for Scotland, already in place in primary schools but due to come into effect for secondary schools in August 2009).[88] Pupils must register in the scheme using an existing discount card available to all young people in Glasgow (Glasgow Young Scot Card). If they choose the food items, points are added to the Scot Card. The web-based system allows pupils to view the points they have accumulated and exchange them online for a range of consumer goods and entertainment, such as iPods, portable DVD players and cinema tickets. The initiative was supported by partnership working with schools, NHS Greater Glasgow & Clyde, the Scottish Executive's Modernising Government initiative, and Glasgow Young Scot.

The project has been evaluated by the National Institute for Social Marketing.[89] The evaluation suggested that *"the Fuel Zone points reward scheme is having a positive effect on the dietary habits of pupils at schools across Glasgow."* Specifically, it found that:

- The programme is popular. Website registration figures now stand at almost a quarter of pupils across Glasgow – a figure that is continually growing. In 2006, over 2,000 rewards were distributed to school pupils as a result of their healthy eating. The uptake of school meals in secondary schools now stands at 60%, a significant increase from pre-Fuel Zone figures of 32%. Between January 2006 and June 2006 over 800 rewards were issued; nearly 160,000 healthy eating points were redeemed. The most popular reward was the pair of cinema tickets (411 Glasgow pupils); 61 Glasgow pupils received a 30GB Apple iPod.

- More pupils are choosing healthy meal items. In 2006, Glasgow City Council met the targets set out in the *Hungry for Success* report four months ahead of the deadline. Consumption of balanced meals is at 60% compared to a pre-Fuel Zone figure of 30%, according to product sales figures.

The scheme gained a lot of media attention when it was launched. It is reported that in 2005, over 250 local authorities came to see what the team had achieved, as well as parties from all over the world including Japan, Finland and the US.[90] Based on the success of the scheme, it is reported that several other local authorities are starting their own Fuel Zone schemes: Knowsley, Birmingham, Hull, Sunderland, Rotherham and Renfrewshire.[91]

A similar type of rewards scheme for school meals has just been piloted in schools in another part of Scotland: the Get Stuck In initiative of the East Ayrshire Council.[92] This ethical marketing scheme, which was piloted in primary and secondary schools between 3 November, 2008 and 30 April, 2009, aimed to increase participation in school lunches in primary and secondary schools at a time when new mandatory school food standards were being phased in. It was launched as the second component of a 'school meals marketing plan'; the first component involved new co-ordinated marketing materials (menus, poster, price lists, leaflets etc), a local advertising campaign (press, outdoor and radio) and "*continuing improvement in menus and education via 'the whole school approach'.*"[93] The rewards scheme was part of the second stage of the plan to 'incentivise the customer.' There are three important differences with the Fuel Zone system.

First, points are collected by the class, not the individual pupil. In the system, pupils taking lunch and/or breakfast earn points (10 meals = one point, valued at 5p for the programme). All pupils are issued with a diary card to record each school meal they take (each diary card records 20 meals and equates to two points, with no limit on the number of meals). The catering staff, teachers or pupils mark the child's card for each meal and the purchase is recorded electronically via the catering services management system; periodically, the total is emailed to the head teacher of each school the number of points collected. Posters are provided to each school explaining the scheme and providing an area to update points and give options for gifts. Once points are collected, pupils decided on the rewards.

The second difference is the nature of the rewards. Rather than consumer goods and entertainment, pupils gain 'ethical' reward points for overseas aid. Conducted in conjunction with Save the Children, the points rewarded will be used to help buy farm animals, food supplies and medical supplies and equip classrooms for projects run by the charity. The third difference is that the points system was not based on the degree of healthiness of the product, since, owing "*to the recent introduction of stringent school meal nutritional standards, all the food is healthy food*".[94] The aim was thus more to promote uptake of the meals, rather than of particular items within the meals. According to the programme manager "*the key issue in ensuring the success of the scheme is the whole school supporting the initiative and promoting the value of school food for health and well-being, rather than it being regarded as a catering initiative*".[95]

The first pilot has just been completed, but the initial results show that over a 100-day period, uptake of school lunches increased in primary schools on average by 11%. The highest reported increase for a single school was 72% (though this was also a function of additional activities), 55%, and then 26%. A total of 72,700 points were collected. For secondary schools, the average increase in uptake was just 1%, though the three highest achieving schools achieved 48%, 23% and 11%. This comes in the context of the phased-in introduction of the new school food standards in Scotland, which have been associated with an overall drop in school meal uptake in the country.[96]

The scheme will be piloted again in August 2009 for 190 days.

The second type of financial rewards scheme used to encourage healthy eating in UK schools focuses specifically on fruit and vegetables. The Food Dudes scheme started as a pilot in Ireland in 1992.[97] The scheme was rolled out across Ireland in 2007, and is now being implemented in England. A roll-out in selected regions of England (Wolverhampton, Bedford, London) started in January 2009 (supported by the Government's School Food Trust and the Department of Health). A trial of the programme is also scheduled to begin Italy in 2009, and plans are also being developed to introduce the programme in the US and Canada.

Food Dudes aims to increase fruit and vegetable consumption among primary school children through a combination of peer-modelling and rewards. Developed by psychologists at Bangor University, Food Dudes is based on the principle that influential role-models for children encourages imitation, and that rewards reinforce the behaviour. Phase 1 (16 days) of the programme involves children being read, daily, a letter and/or watching a specially designed DVD episode (lasting six minutes) starring the Food Dudes. Children are then given a portion of fruit and a portion of vegetable; those who succeed in eating both the fruit and vegetable are given a small reward (e.g. juggling balls, pencils, pedometers, etc). The rewards are used at the beginning of the programme to encourage children to repeatedly taste fruit and vegetables so that they begin to enjoy the taste of the foods.

Children are also provided with a Food Dudes Home Pack to encourage them to eat more fruit and vegetables at home through the involvement of parents and a system of self-monitoring. Phase 2 of the programme continues to support successful eating of fruit and vegetables, but with less intensity than during Phase 1. Classroom Wall Charts are used to record consumption levels of these foods, and as the children achieve more advanced goals they earn further rewards and Food Dudes certificates.

Food Dudes has been evaluated through test sites set up by academic researchers. The studies, all of which appear in the peer-reviewed literature, show that it has been successful in increasing fruit and vegetable consumption among children.

- A study in London on 749 children (aged 5 to 7 years) compared eating patterns in two similar schools. Children were provided with free fruit and vegetables at lunchtime in both schools, but only one with the Food Dudes programme. In the school that had the Food Dudes programme, fruit consumption more than trebled and vegetable consumption rose significantly, whereas children in the control school continued to eat very little of these foods. The greatest increases in consumption were seen by the children who ate least at the start: they went from eating just 4% of the fruit they were given prior to the Food Dudes intervention to eating 68% after it. Four

months later (at follow-up) these children were still eating twelve times the fruit they ate originally, and four times the quantity of vegetables. The poorest eaters in the control school, however, continued to show no interest in eating fruit and vegetables in spite of having them readily available.[98]

- Another study (402 children, aged from four to 11 years in three primary schools in Bangor, Manchester and Harwell, Oxfordshire), found that consumption during the intervention was significantly higher than during baseline at lunchtime and at snack time, and consumption outside school was significantly higher during the intervention on weekdays. Following the intervention, children's liking for fruit and vegetables also showed a significant increase. In terms of the quantities of additional fruit and vegetables consumed, very large increases were shown by those children who ate least at the outset.[99]

- In another study in Ireland, where school meals are not provided and children bring in a pack lunch from home, participants were four to 11 year-old children attending two primary schools.

Fruit and vegetables were provided free in both schools, but only one had the Food Dudes programme. Relative to baseline, consumption of the fruit and vegetables provided increased during the intervention in the experimental school, whereas in the control school it showed a significant decline. At 12-month follow-up, parents in the experimental school provided and their children consumed significantly more lunchbox fruit, vegetables and juice relative to baseline and to the control school.[100]

- A study in a nursery school found that Food Dudes was effective in children aged two-four years.[101]

Another scheme based on the same principles as the Food Dudes scheme has also been tested in nursery schools (aged two to five years) in East Sussex. Simon and Sinita was a product of the Fresh Ideas, a sub-programme of CAFE (Community Action for Food and The Environment), the successor to the Food and Low income Project in Brighton, Hove and Lewes. The programme was developed by Fresh Ideas in 2000 following visit to Bangor University. A number of Sure Start programmes in East Sussex successfully used the programme and it is currently a Sure Start programme Promising Practice Example, but has not been continued owing to lack of funding.[102]

The programme was aimed at three to five-year-olds in pre-school and reception, and used a reward system and video peer modelling. During a period of one week, immediately prior to 'snack time' children watched a short video of *"happy smiling four to five year olds having a great time, playing in a sunny playground, and commenting to camera that they have fun because they have lots of energy, and they have lots of energy because they enjoy their fruit and vegetables".*[103] These shots were interspersed with cartoon characters Simon and Sinita reinforcing messages. Each video featured a specific fruit or vegetable. Over four weeks children were introduced to two fruit and two vegetables. After viewing the video, snack time consisted of the featured fruit or vegetables, cut up into small portions, plus other non-featured fruit or vegetables. Staff sat with the children and modelled the desired behaviour of trying the snack. Specific behaviours had specific rewards:

- Sampling a tiny amount: reward was a sticker 'I'm a fruit eater' or 'I'm a veg taster'.

- Eating the featured fruit or vegetable: a wrapped present (a piece of cut and play fruit and vegetable, plus basket or box to put it in).

- Eating up all the fruit or vegetable offered: a sticker to go on the class chart - a full chart at the end of the four weeks rewards the class a play kit.

Although based on the same principles, the programme differed from Food Dudes by being designed for a younger audience, using fruit and vegetable-related rewards, and using a hierarchy of rewards. An evaluation of Simon and Sinita found that consumption rapidly increased over the four weeks; consumption subsequently declined but remained noticeably higher than inception after six months.[104]

Another example from the same region is the Kids' Corner and Collectible Card initiative of the East Sussex Downs and Weald PCT.[105] The aim of the programme was to stimulate the habit of going to the greengrocer for an after school snack, with repeat visits supported by a 'collectible card initiative'. The initiative involved recruiting local greengrocers to set up an in-store 'kids' corner' of fruit and vegetables attractive to children (mainly primary school children). The produce was discounted to be around ten pence per item. When a child purchased a fruit or vegetable from the kids' corner they received two free collectable cards out of a potential set of 11. The cards consisted of fruit and vegetable characters making up a football team called Fruitables United. Educational information relevant to the featured fruit or vegetable was provided on the back, together with the 5-A-Day portion. The cards could then be mounted on a poster given out by schools. Children were also given free vouchers for fruit and vegetables at schools. The scheme was piloted between 11 November and 22 December, 2004 at a single greengrocer. On average, there were 53.4 transactions at the kids' corner per day; 28 from vouchers, and 25.4 from cash.

Further rewards-based initiatives are also likely in place. According to a paper prepared for the Cabinet Sub-Committee for Children and Young People in Wales, in 2004, 9% of Secondary Schools in Wales provide rewards or incentives for pupils choosing healthy options in their canteen.[106] These included: vouchers (such as swimming and gym use), entry into competitions/ prize draws (e.g. to win a mountain bike), free vegetables or salad, entitlement to a free healthy meal and discounts on healthy meals. Small rewards – stickers – are also a small component of the

Grab 5! programme, developed by Sustain: The Alliance for Better Food and Farming, which used a "*wide range of practical activities including fruit and vegetable tasting sessions, setting up fruit tuck shops, breakfast clubs, growing clubs, cooking clubs and visits to farms*."[107] The evaluation found the scheme to be successful but did not measure the effects of the rewards.

Financial reward schemes have also been developed by the private sector. The supermarket Sainsbury's has offered several financial reward promotions on fruit and vegetables over the past few years. According to its website, *"In January 2007, our 'Big 5 drive' encouraged customers to eat more fruit and vegetables. Customers who spent £10 or more in a single visit received a 'Big 5 drive' game card with a one-in-three chance of winning products containing at least one portion of fruit or vegetables. Every card, whether a winner or not, included a helpful tip to get shoppers thinking about healthy eating. Altogether, we gave away more than 10 million items of fruit and vegetables – fresh, frozen and canned."*[108] Another promotion was conducted in partnership with PruHealth, the private medical insurer as part of their Vitality scheme (see section 3.2.2.2). Under the agreement between the two companies, people with a PruHealth medical insurance policy can reduce the cost of their premiums by buying fresh fruit and vegetables at Sainsbury's.[109] For every £2 spent on such items each week, consumers can earn one point – up to ten points a week – which is added to a loyalty card useable at Sainsbury's, the Nectar card. The points earned in one year are then offset against the cost of premiums the following year, as long as no claims have been made on the policy.[110]

3.2.3.2 Rewards for educational activities and programmes for healthy eating

Rationale

Another type of financial reward scheme is the provision of a payment, reimbursement, or some other form of reward of monetary value, as a reward for engaging in some form of educational activity or programme to encourage healthy eating. This approach has been tried to address other unhealthy habits, notably drug and tobacco cessation programmes. The National Institute for Clinical Excellence (NICE) in the UK recommends paying illicit drug users to comply with drug cessation programmes.[111] The recommendation is based on over 25 trials that showed the approach to be effective.[112] For tobacco, small trials suggest that financial incentives increase enrolment in cessation programmes, but do not stimulate long term cessation. However, a much larger, recent study of employees of a large company proved successful. The programme involved offering payments for attending tobacco cessation courses, with those who actually quit smoking gaining a higher payment.[113]

Another potential option is to penalise people who fail to participate in such activities. While a few examples were identified for workplace employees failing to attend tobacco cessation classes, their use did not appear to be widespread, and reviews of the evidence suggest that penalties are less likely to be successful than rewards on the basis they reinforce a sense of failure.[114]

In light of these precedents, financial rewards for partaking in educational activities or programmes to encourage healthy eating are being suggested. The government's *Healthy Weight, Healthy Lives* strategy for England specifically states that: *"We [the government] will provide resources to pilot and evaluate a range of different approaches to encouraging healthy living. For example, we will look at using financial incentives, such as payments, vouchers and other rewards, to encourage individuals to lose weight and sustain that weight loss, to eat more healthily, or to be consistently more physically active"*.[115]

Examples and evidence of effects

Few examples of rewards schemes were identified in the UK. One example is the My School Lunch programme, a web-based programme that works in conjunction with local authorities.[116] Developed and managed by a marketing agency (founded by a previous County Council manager), it is based on research that children enjoy interactive web content. The website's (password protected) kids' section runs competitions on a regular basis, in which children have to engage with questions about food, with a specific emphasis on healthy eating.[117] The questions aim to inform, educate and motivate children about food and healthy eating. The winner is rewarded with a prize. Each game and competition is linked directly to the national curriculum, e.g. it may involve numbers that follow the maths curriculum. The programme is used by 27 local authorities around the country. The web content is adapted for each authority; each has their own cartoon character and online club through which the competitions are run.

Another quasi-example is the Health in Pregnancy grant. Initiated in April 2009, it is a one-off payment of £190 to *"expectant mothers ordinarily resident in the UK, to help with the costs of a healthy lifestyle, including diet, in the later stages of pregnancy."* The grant is not a direct reward for taking nutrition education classes, nor are the recipients obliged to spend it on nutrition-related activities. But, according to the Department of Health it "*will be linked to the requirement for pregnant women to seek health advice from a health professional. It may therefore provide a greater incentive for expectant mothers to seek the recommended health advice at the appropriate time*."[118]

One further potential example currently under development is the Steps to Health programme of the Young Foundation Health Launchpad Initiative and the Birmingham East and North NHS PCT. The programme aims to *"set up and run incentive schemes to support and reward people for taking better care of their health."*[119] It focuses on incentivising individuals to improve their health; the PCT is particularly interested in the scheme on the premise that it has the potential to reach hard-to-reach individuals who are generally not responsive to public health campaigns. A pilot project to test

the scheme was launched in June 2009 in Birmingham, targeting three different groups: people with healthy conditions (e.g. diabetes, heart disease) who need to manage the disease; people who do not have a disease but have unhealthy habits; and school age children who are at an appropriate age to learn about healthy behaviours. The programme will provide rewards with prizes for behaviour changes, education, etc. The pilot will test the success of different types of incentives among the different target groups, on the basis that there is currently insufficient information about what rewards actually work for different groups. Two different types of reward prizes will be tested: prizes which themselves are healthy activities, like gym membership; or consumer-oriented goods, like points on mobile phones. The effect of the rewards will be evaluated by the Centre for the Study in Incentives in Health (see section 1). Diet will be a component of the study, although the details of how it will be incorporated, and whether educational activities around healthy eating will be included, have not yet been decided.[120]

In the US, rewards schemes are used more widely, notably for weight loss programmes. Many such programmes include dietary advice. A systematic review of the evidence on the use of financial incentives in treatments for obesity and overweight published in 2008 identified nine weight loss programmes using financial incentives that had been evaluated in the peer-reviewed literature.[121] All were in North America. At least eight included the provision of some form of advice, although the incentive was not necessarily provided directly for attending dietary sessions. Some of the studies found that weight loss was significant in the short-term. For example, a study conducted in the early 1990s found that 'incentive groups' had 1.5 times greater chance of achieving and maintaining weight loss. In the intervention, respondents were provided with a well-informed plan to guide them in their food choices, but it was the financial rewards that enhanced the compliance to maintain these healthier eating habits.[122] Overall, the review found no significant effect of use of financial incentives on weight loss or maintenance at 12 months and 18 months. Further sub-analysis found non-statistically-significant weak trends in favour of rewards for behaviour change rather than for weight.

Rewards for educational activities around healthy eating appear to be more prevalent in the private sector. Such reward programmes are typically part of workplace wellness programmes. Workplace schemes, managed either by the employer or by the health plan provided to employees, involve a multitude of activities to promote health, such as worksite health screenings, cholesterol testing, health advice lines, walking programmes, informal sports leagues, weight loss groups, wellness seminars and healthy eating classes.[123] Many of these schemes include rewards-based incentives. The use of financial rewards for participating in 'wellness' programme that may include dietary advice is increasingly rapidly in the US, where employers have found that they can lower health costs and increase the productivity of workers. In a 2005 survey of 365 large US-based companies, nearly half reported offering an incentive to participate in wellness schemes.[124] The most commonly reported rewards were gift cards, prizes or merchandise, followed by a rebate of programme costs, cash payments or reduced medical co-pays. Healthy eating classes have not been the most prominent of the activities in these wellness schemes, but there are some examples. In one example, workers for the company Affinia Group are rewarded with $50 to $200 in tax-free health reimbursement accounts for taking healthy eating classes.[125]

Such wellness schemes are gaining international prominence because of the role of the private sector and the multinational nature of many large companies. The World Economic Forum (WEF) has made workplace wellness a theme and issued a call to action to increase the use of such programmes.[126] The WEF recently collaborated with the World Health Organisation (WHO) on a report on workplace wellness initiatives. The report concluded that the workplace wellness programmes should all consider *"incentives to foster adherence to the programmes and improving self-efficacy of the participants"* on the basis that they build motivation, encourage participation and prevent declines of participation rates.[127] Likewise a review of international examples from large companies concluded that rewards-based incentives are a 'must do' – in workplace wellness schemes because they *"increase participation and recognize employee's efforts."*[128]

3.3 Financial (dis)incentives that target food and health service providers

3.3.1 Subsidies

3.3.1.1 Subsidising agricultural producers

Rationale

In recent years, researchers and advocates have highlighted the possible link between agricultural subsidies and diets in the EU and North America. Several reports have implicated the EU's Common Agricultural Policy (CAP) in excessive consumption of dairy fats, vegetable fats, and inadequate consumption of fruit and vegetables in the EU diet. The policies in the CAP that affect these foods are summarised in Table 4.

A report published by the National Institute for Public Health in Sweden argues that the CAP leads to overproduction, in turn encouraging food availability surplus to need, and consequently, excess consumption and obesity.[129] The report, *Public Health Aspects of the EU Common Agricultural Policy*, raises questions about the impact of the dairy policy regime on the consumption of dairy fats. It notes that 25% of milk produced in the EU is withdrawn from the market and disposed of using reduced price schemes or donation; 90% of this butter fat is disposed of through reduced price

Table 4 **Policies in the EU's common agricultural policy affecting dairy fats, vegetable fats, and fruit and vegetables**

Food	Policies
Dairy	■ Significant intervention though at least 14 different measures, including intervention measures, export subsidies, quotas, and support to promote consumption
	Butterfat and skimmed milk - Import tariffs ■ Minimum price guarantees through intervention buying and withdrawal when market price falls below a set level ('withdrawal support') ■ Disposal of withdrawn stocks though reduced price schemes or donation (sale at reduced prices to food and feed industry for incorporation into ice cream and bakery products; sales to non-profit-making organizations and persons on social assistance; free distribution to deprived persons; subsidised exports)
	Milk - Milk quotas to limit production ■ School milk policy
Oilseeds	■ Annual area payment decoupled from total production
Fruit and vegetables	■ Import tariffs ■ Minimum price guarantees through intervention buying and withdrawal when market price falls below a set level ('withdrawal support')

Sources:
Public Health Aspects of the EU Common Agricultural Policy. Elinder LS. Stockholm: National Institute of Public Health, 2003; *Consumption implications of agri-food policies.* Traill B, Henson S. Proceedings of the Nutrition Society 1996;55(2):649-59; *Health Impact Assessment of the EU Common Agricultural Policy.* Whitehead M, Nordgren P. Stockholm, Sweden: National Institute of Public Health, 1996.

sale to the food industry for use in pastry and ice cream. Since this lowers the relative costs for the food industry, the study hypothesises that the reduced price sales of butter fat withdrawn from the market increases the availability of butter fat and thereby promotes consumption. Because it appears to subsidise the consumption of saturated fat (via encouraging the use of butter rather than vegetable fat), this policy is labelled as 'counter to public health.' A recent study attempted to estimate the burden of cardiovascular disease within 15 EU countries as a result of the excess dietary saturated fat consumption attributed to the CAP. The model suggested that the cardiovascular disease burden attributable to CAP appears substantial and that altering it could result in approximately 9,800 fewer coronary heart disease deaths and 3,000 fewer stroke deaths each year.[130]

Another dietary concern raised about the CAP concerns fruit and vegetables. An early health impact assessment noted that the withdrawal support mechanism for fruit and vegetables (Table 4) may be deterring consumption by removing fruit and vegetables from the market.[131] In 1993/94, for example, around 2.5 billion kilos of fruit and vegetables were withdrawn from the market. Although the withdrawal scheme was altered in the 1996 CAP reforms, just over one million tonnes (1.4% of total production) of fruit and vegetables were withdrawn in 2001.

In the US, it has also been argued that the high agricultural subsidies provided to corn and oilseeds increase the supply and use of derivatives of these commodities in energy-dense processed foods and soft drinks, thus increasing their availability, lowering their costs and encouraging consumption.[132] And in a real-life' example, the abolition of the high producer and consumer subsidies in the former Soviet Union, led to a dramatic drop in meat consumption (albeit in a unique political situation).[133]

According to this perspective, subsidies on foods like beef, dairy, vegetable oils and corn are providing a financial incentive for farmers to produce these foods to excessive levels, while the lack of subsidies for fruit and vegetables provides a disincentive. The proposal is that the subsidies should be reoriented to promote greater production of healthier foods.

But several papers cast doubt on this analysis. Researchers in the Netherlands attempted to quantify to the effect of fruit withdrawal.[134] The model found that if the withdrawal scheme were abolished, the average increase in consumption of fruit and vegetables among the Dutch population would be 1.80% (at a 95% uncertainty interval), amounting to 5-6g per person per day on average, leading the researchers to conclude that ending the fruit and vegetable component of the CAP would be modest in terms of increased intake and health gain.

Several agricultural economists also disagree with the analysis conducted by the public health sector on the basis of analysis of the impact of the CAP on food prices. Their studies suggest that the CAP has had the effect of raising overall food prices in the EU relative to world market prices (because

the CAP provides a minimum guaranteed price which is higher than the world market price). Economists have identified that this price-raising effect is greater for beef and dairy foods and sugar, and thus that the CAP has *"succeeded in pushing the diet of EU consumers in the direction that the medical profession would now regard as 'more healthy'."*[135]

Modelling studies find that the CAP has the effect of reducing the consumption of cheese, beef, butter, and sugar.[136] Most recently, a study concluded that the CAP could not have been responsible for changes in the EU diet since the 1970s since its subsidies have had a very small effect on final consumer retail prices.[137] Similar perspectives have been expressed in the US, where studies suggest that lower farmgate prices have not translated into lower consumer prices, and that direct payments do not significantly affect the affordability of food. These studies conclude that agricultural subsidies cannot be attributed with contributing to the obesity epidemic in the US, and thus dispute the rationale for targeting agricultural subsidies as a means of encouraging healthier eating.[138]

Examples and evidence of effects

No example was identified of a subsidy programme specifically altered to take account of dietary concerns, but one relevant initiative has been mooted in the US. The Healthy Oils Incentive programme was proposed as part of the 2008 Farm Bill (the legislation that sets policies on subsidies and other agricultural matters in the US). The amendment was not included, but would have provided a temporary financial incentive for farmers to produce oilseeds 'with traits that improve public health,' by giving the USDA the discretion to make payments to farmers to help ensure acreage sufficient to produce the oilseeds that can provide trans fat-free oils. The Bill was endorsed by the American Heart Association.[139] In general, the role of producer incentives to grow different oilseeds used in vegetable oils used directly by consumers, such as olive oil, and by manufacturers, such as Walkers use of Sunseed oil, would be a useful subject of study.

3.3.1.2 Subsidising retailers

Rationale

Concern over 'food deserts' in the 1990s – deprived, low-income areas with few food shops – led to a host of studies examining the role of access to shops in dietary patterns in the UK. While the studies are not conclusive, the issue of food access moved up the policy agenda. It emerged that retailers were unwilling to locate in these areas, and existing retailers unwilling to stock fresh produce, on the basis of insufficient profitability. One proposed solution was to provide financial incentives to increase the provision of nutritious foods in these neighbourhoods.

Subsidies to increase the provision of nutritious foods can be made to: (1) new forms of retail provision; (2) existing retailers to sell more nutritious foods; and/or (3) existing retailers to locate in areas with poor food access.

Examples and evidence of effects

With regard to providing subsidies to new forms of retail provision, there are a large number of examples in the UK where public funding has been used to incentivise the creation of local food projects, such as food co-ops.[140] A complete review of all these projects is beyond the scope of this review, but two examples were identified with some form of evaluation. The community food co-operative programme in Wales is managed by the Welsh Rural Regeneration Unit, with funding from the Welsh Assembly Government. The scheme was developed to improve access to fruit and vegetables in deprived communities, while also supporting local producers in rural areas and promoting volunteerism.[141] Over 190 food co-operatives are now in place across Wales, and the Rural Regeneration Unit have set a target of 315 co-ops across Wales open and running by the end of 2011.[142] The Unit would also like to see the programme rolled out across the UK.

Each co-op enables people to access fresh fruit and vegetables on a weekly basis at wholesale prices. A bag of vegetables usually costs £2.50, and the same for fruit, although costs can vary because some groups favour having a greater quantity than others. The co-ops provide fruit and vegetables to approximately 6,500 families and involve around 1,400 volunteers. An evaluation of the project was published in 2006 by Cardiff University. It did not conduct a quantitative test on the effect on consumption, but found that "*the vast majority of customers who we interviewed claimed to have increased their consumption of fruit and vegetables since joining the co-op. Increased consumption was variously attributed by customers to the size of the bags, the low price of the produce and the improved taste*". Respondents also talked about how unhealthy foods, which were previously a feature of their diets, had been substituted with healthier choices, and how they had changed their food preparation methods to include more fruit and vegetables. It was also, noted, however, that co-op customers were more likely to be individuals who already considered fruit and vegetables to be important in their daily diet.[143] A further evaluation of the programme is about to be carried out. The programme has won several awards, including the WHO EURO Counteracting Obesity Award.

A similar scheme was also developed in West Cumbria, funded by the Department of Health, DEFRA and the NorthWest Development Agency. An evaluation of the scheme, carried by the University of Central Lancashire, found that 63% of respondents reported changing their eating behaviour by eating more fruit and vegetables since they started using the food co-op and 71% reported eating more healthily.[144]

In another example, Community Food Enterprise (CFE) was established in early 2003 to improve access to healthy diets in Newham, London, with funding from the Newham Development

Corporation. It included the development of Social Food Outlets in both fixed and mobile units. Most outlets operated from fixed sites based in schools, staffed by volunteers. They sold fresh fruit and vegetables at affordable prices to parents and the local community at the end of the school day. The mobile unit – a specially outfitted truck – catered to the less mobile population. The project also included delivering fresh fruit to nurseries and toddler groups in various parts of the borough, as well as providing fruit and vegetables bags ('boxes') to vulnerable families throughout Newham. The produce in each 'box' had a value of £2.50. In addition, working with local GPs, residents in the Newham catchment area with identifiable diet-related conditions, such as obesity, diabetes and coronary heart disease, were given vouchers valued at £2.50 each redeemable for fruit and vegetables at any Social Food Outlet. An evaluation of the project for the period August 2004-September 2006 did not measure consumption outcomes, but found that 2,748 customers purchased goods from Social Food Outlets, 5,665 customers purchased goods from Mobile Food Store and 4,000 vouchers were redeemed by over 50s at these stores; 2,000 bags of mixed fruit & vegetables delivered to over 50s and 300 vouchers redeemed by Doctor Referral Scheme.[145]

In terms of examples of incentives for existing retailers to promote healthy eating, the Scottish Grocers Federation's Healthy Living Programme aims to improve the supply and provision of fresh produce and healthier food in convenience stores, particularly those in more deprived areas. The financial incentive comes in the form of a subsidy for the programme from the Scottish government. Around 600 stores are taking part in the scheme, begun in 2004. To date, the programme has resulted in:[146]

- A 14.6% increase in total soft drink sales and a 21% increase in cash profit achieved by increasing the range of fruit drinks and reducing the range of carbonated drinks.
- A promotion featuring a range of healthy ready meals resulted in a 260% increase in sales.
- Moving fruit and vegetables from the rear of the store to the front contributed to a 36% sales uplift in the first week and has produced ongoing increases of 62%.
- In another store, a 400% increase in sales of fruit and vegetables was achieved by increasing the space for the category and moving it to the front of the store.
- More fruit than confectionery was sold by positioning it at checkouts.

Following the Scottish precedent, a pilot three-year programme began in the North East of England in 2008. The financial incentive comes in the form of £200,000 from the Department of Health in 2008, with £300,000 for the next two years. Working in conjunction with the Association of Convenience Stores, the aim is to help local shops sell and promote fruit and vegetables.[147] Twelve stores originally signed up to the pilot with the aim of 120 coming on board by May 2009; all have agreed to match fund the Government's contributions. Shops involved in the pilot will sell a wider range of fruit and vegetables and display them prominently within their stores. In return, the Department of Health will assign a project coordinator to work with each store and offer advice on maximising profits, minimising waste and displaying and promoting the new fresh produce to the local community. Shop keepers will also be able to link up with local initiatives, such as cooking clubs, in a bid to help their customers learn how to build fruit and vegetables into their diet. The pilot scheme forms part of the Department of Health's new Change4Life coalition.

In terms of providing subsidies for retailers to locate in deprived areas, no examples could be identified from the UK. But in the US, where the link between access to shops and diet is much clearer and stronger, financial incentives have been commonly used to attract supermarkets and other grocery outlets to locate in inner city or other deprived neighbourhoods.[148] Such incentives are now beginning to be developed with the specific goal of promoting healthier diets. Known as Fresh Food Financing, the first state-wide programme was implemented in Pennsylvania in 2004.[149] As of December 2008, the government fund had provided $38.9 million in grants and loans for healthy retail projects, resulting in the creation of 50 stores that offer fresh foods, 3,723 jobs, and 1.2 million square feet of floor space. Similar initiatives are now beginning in other parts of the country, including New York State,[150] Louisiana, and Detroit. In 2008, Harvard University named the initiative one of the nation's most innovative government programmes. The project has been evaluated in terms of its economic impact – which found that the scheme had economic benefits[151] – and is currently being evaluated for its health impact by the US National Institutes of Health.[152] Growing interest in Fresh Food Financing has also led to consideration of federal legislation. The Healthy Foods for Healthy Living Act was introduced but never passed. The bill would have provided – like the projects in Scotland and England – grants to assist independently-owned and operated small businesses such as bodegas and corner stores to expand their inventories to include fresh fruit and vegetables and other healthy alternatives.

In the UK, two studies have also examined the impact of a new supermarket in deprived areas. One – which lacked a control group – in Leeds found that the new supermarket was associated with rising fruit and vegetable consumption.[153] The other, a quasi-experimental study in Glasgow, concluded it had no net effect on fruit and vegetable consumption.[154]

3.3.1.3 Subsiding meal providers

Rationale

Another option alongside subsiding retailers is to subsidise meal providers to increase healthy food provision, by providing subsidies for meals or snacks that follow set nutrition criteria or include more healthy items.

Examples and evidence of effects

Many governments around the world, including the UK, provide subsidies for school meals that must follow nutritional guidelines. There are also an increasing number of programmes that subsidise fruit and vegetable provision in schools throughout Europe and in the US,[155] including the Department of Health's School Fruit and Vegetable Scheme.[156] The EU has recently initiated a School Fruit Scheme which subsidises Member States to set up schemes to provide fruit in schools.[157] In addition, the private sector are involved in voluntary initiatives to support meal programmes. For example, under the Change4Life programme, Kellogg's is funding breakfast clubs around the country (though it is not clear if there are nutritional guidelines for the food served at these clubs).[158] These programmes have been much discussed elsewhere and are not evaluated in this report.

3.3.2 Financial rewards or penalties

3.3.2.1 Rewards for healthy food provision

Rationale

Providing food providers with rewards for providing healthier options is potentially a mechanism to encourage them to do so.

Examples and evidence of effects

In the UK, there appears to be no major example of a financial rewards scheme provided to caterers for providing healthier meals. One quasi-example is the Healthyliving award in Scotland, and the Heartbeat Award and derivative schemes in England. The schemes provide 'awards' for healthy food provision, as an incentive for catering outlets to provide high hygiene standards and healthier food options, but provide no financial reward.[159]

The Health Education Authority (HEA) launched the Heartbeat Award (HBA) scheme in England in 1990.[160] It evolved from the Heartbeat Wales project, initiated in 1985. The HBA was awarded to catering establishments fulfilling the criteria that: (1) at least one-third of the dishes on the menu were healthy choices; (2) at least one-third of the eating area was non-smoking; and (3) at least 30% of food handling staff had received training on hygiene; and the premises complied with food hygiene regulations. The replacement of the HEA with the Health Development Agency meant that the central organisation was dissolved and the scheme was adopted by local PCTs. Most PCTs have such awards based on the basic three criteria, and have adapted the healthy eating criteria according to their local circumstances (all now must be 100%-smoke free by law).

The rewards increase depending on adherence to set criteria. For example, Harlow Council, Essex, provides catering establishments with 'gold' and 'silver' awards.[161] For a silver award, if chips or fried rice are served, an alternative starchy food such as pasta, boiled rice or mashed, boiled or baked potatoes without added fat must always be available, and frying must be replaced by lower fat cooking methods wherever possible. Reduced fat milk must always be offered and used in cooking wherever possible, at least one choice of fresh fruit and vegetables must always be readily available. A gold award requires that at least 50% of the food served is clearly described as 'healthy eating.' In July 2008, 46 local catering establishments received awards.

Another example comes from Dudley Metropolitan Borough Council, the Dudley Food for Health Award, a partnership between Dudley Metropolitan Borough Council and Dudley Public Health Department.[162] There are four classes of awards: Platinum, Gold, Silver and Bronze, which include the criterion of having a pricing policy that encourages fruit and vegetable consumption. In 2006/2007, 47 awards were made, 55% of which were schools and 26% residential/care homes.[163] An evaluation is currently being planned to analyse whether the scheme has had an impact on sales and consumption. Results will be due in October 2009.[164]

Several evaluations have been conducted of the original Heartbeat Award, though only one actually measured the impact on dietary outcomes. All these evaluations are rather dated and may not represent the current situation. A study of the Welsh Heartbeat Award Scheme in 1991-92 found Environmental Health Officers and catering establishments valued the scheme.[165] But other evaluations published in 1997 and 2001 respectively found that over half of the customers of the catering establishments were not aware of the award, and there were poor levels of compliance in catering places with healthy eating criteria.[166] Another study, from 1997, aimed to compare the differences between those premises with and without the award with regard to their catering practices. Award holders tended to provide more healthy options, including brown rice and semi-skimmed/skimmed milk, to the consumer and commitment to healthy eating. While the research suggests that the award scheme may be increasing consumer choice of healthy options, it was not possible to draw conclusions about the impact of the scheme on eating habits.[167] The most recent evaluation concerned dietary outcomes in workplace catering establishments which had received the award. It found that the presence of an award led to changes in the consumption of four food items:

an increase in the consumption of fruit and lower fat milks and a reduction in the consumption of fried foods and sweet puddings.[168] The award thus appeared to have a modest outcome for dietary intakes.

In 2006, a similar scheme was launched in Scotland. The Healthyliving award is made to food service outlets fulfilling a series of criteria: levels of fats and oils, particularly saturated fat, must be kept to a minimum, as must salt and sugar. Fruit and vegetables must be clearly available, and at least 50% of the food on the menu must be labelled as healthyliving choices. The catering outlets must also have a sales promotion and marketing strategy which works alongside the general principles of the Healthyliving award and supports healthier eating.[169] As an award, the outlet receives an apple logo, which can be displayed to customers. As of 2009, over 1,000 catering establishments had received the award.[170]

The Department of Health is also in process of developing a new Healthier Food Mark as an award to public sector canteens that provide nutritious food and encourage healthier eating. The new mark will be awarded to catering companies who serve the public sector if they meet certain criteria, including sourcing ingredients that are lower in saturated fat, salt and sugar.

3.3.2.2 Rewards for educational activities and programmes for healthy eating

Rationale

Workplace wellness initiatives were reviewed in Section 3.2.3.2. One way of increasing the application of these schemes is for governments to incentivise the companies to develop them through funding. It has been suggested, for example, that companies with wellness programmes could be provided with tax benefits if they provide results – the rationale being that this will increase the incentive for companies to implement effective programmes to encourage healthy living. As put by the government's obesity strategy for England: "*Our vision is a future where all employers value their employees' health, and where this is put at the core of their business plans. The longer-term risks and costs of ill-health arising from excess weight will be clear to everyone, and there will be stronger incentives for people, companies and the NHS to invest in health*."

Examples and evidence of effects

The review of incentives prepared for Health England (referred to in Section 1) included examples of introducing incentives for PCTs and Practice-Based Commissioners for all types of health conditions. It found there was not a significant amount of evidence. It also reviewed evidence of providing incentives to health providers, like GPs, but these were not specific to healthy eating.

There is no identified scheme in place in the UK for rewarding employers for providing wellness schemes, but in the US, it was recently reported that Congress is planning to give employers "*sweeping new authority to reward employees for healthy behavior, including better diet, more exercise, weight loss and smoking cessation*." Congress is reported to be seriously considering proposals to provide tax credits or other subsidies to employers who offer wellness programmes that meet federal criteria. In addition, law makers said they would make it easier for employers to use financial rewards or penalties to promote healthy behaviour among employees. Under the proposal, employers could obtain tax credits for programmes that offer periodic screenings for health problems and counselling to help employees adopt healthier lifestyles. Programmes could focus on tobacco use, obesity, physical fitness, nutrition and depression.[171]

3.3.2.3 Rewards and penalties for advertisers

Rationale

While much discussion has centred on how to reduce the amount of advertising and other promotional activity for foods high in fat, sugar or salt, relatively less attention has focused on providing financial disincentives direct to the advertisers. But it has been suggested that taxing advertising could make it a less financially attractive option, and thus act as a financial disincentive. It could also be possible to reward advertisers for advertising healthier options.

Examples and evidence of effects

One example of a food advertising tax was identified, although the tax itself is a penalty for non-compliance rather than an overall tax. In France, all food advertisers are obliged by law to include nutrition or health messages on the advertising. Advertisers who do not insert the messages have to pay a tax equivalent to 1.5% of their advertising spending, placed in a fund for use by the National Institute of Prevention and Health Education (*Institut national de prévention et d'éducation pour la santé – INPES*). According to government sources, compliance is 95-98%, but the tax raised approximately €300,000 in 2008 for INPES.[172]

4. Conclusions and recommendations

In the public discourse, food taxes are the only widely discussed financial (dis)incentive to promote healthy eating. But there are many other possible financial (dis)incentives that could encourage healthier diets – and their use is increasing. Many have been tried and tested by the public and private sectors in different settings at the national and local level, and some have been shown to work. But these incentives have not yet been placed into a coherent policy strategy. This state of affairs, and the evidence collated in this report, leads to the following 15 recommendations.

General stakeholder-oriented recommendations

(1) The Department of Health and the devolved UK governments (in conjunction with the FSA where appropriate) should develop a clear strategy on financial incentives to encourage healthy eating. This is warranted by the increasing interest, use and evidence of financial incentives and disincentives to promote healthy eating. To inform such a strategy, they should collect the available evidence on the effect of financial incentives implemented by local health authorities and PCTs (e.g. as part of Department of Health-supported 5-A-Day initiative), as well as their own national schemes. They should also consider developing a Healthy Incentives Pilot based on the funding initiative just starting in the US.

(2) Private actors have a key role to play in developing and implementing incentive schemes. Food and health providers should apply their marketing skills to designing incentives scheme to encourage healthy eating, and test and make available the results of these schemes. .

(3) The research community should actively engage in evaluating ongoing and future financial incentive schemes, as well as playing a role in designing pilots. This is particularly important because the evidence shows that some incentives work well in some contexts, but not in others, highlighting the importance of appropriate design and evaluation.

(4) Non-governmental organisations involved in health, consumer, family and community issues can also play a role at a national or local level in developing, implementing, communicating and/or evaluating financial incentive schemes.

General recommendations on implementation

(5) The evidence suggests that financial incentive schemes are most effective when implemented as part of an integrated package of mutually-reinforcing activities, such as education, marketing or modelling. This is also a conclusion of a recent review of financial incentives in the US, which conceptualised the role of such incentives as being part of three pillars: access to food; education about food; and incentives to consume the food (Figure 1). It is thus recommended that financial incentives are viewed as a tool to help stimulate or reinforce healthy eating as part of a broader package of activities, rather than being implemented in isolation. Similarly, it is recommended that financial incentives are considered as a reinforcing measure to existing healthy eating initiatives, such as the new school food standards.

(6) To be successful, financial incentive schemes need to take local contexts into account. This may well imply, for public-led incentives at least, that a local body is best equipped to implement such initiatives. As already highlighted, some incentives may work in some places or for some people, but not for others.

(7) Careful consideration should be given to which types of incentives would be best developed and/or implemented by public or private actors. Appropriate roles and responsibilities for each actor should be clearly defined for different types of incentive.

Recommendations specific to different incentives

(8) It has not yet been established whether food taxes would be an effective way to encourage healthy eating, and the funding situation in the UK does not seem to warrant the use of food taxes to raise revenue for obesity prevention efforts. Given this situation, it is recommended that efforts in this area focus on the full range of possible financial incentives beyond food taxes.

(9) Food taxes also represent a form of financial disincentive. Disincentives have been far less widely used than incentives, and the energy and commitment-building in this area concerns financial incentives. In general, then, it is recommended that efforts in this area build on this existing positive energy and focus on incentives rather than disincentives.

(10) The evidence suggests that price promotions could be successfully used to encourage consumption of more nutritious foods, but only if very carefully designed. Commercial know-how is needed to make these promotions effective. It is thus recommended that price promotions to encourage healthy eating by retailers be developed and implemented by the private sector, with the government playing a role by creating an incentive for the private sector to shift their entire promotional environment towards healthier eating.

(11) In discrete environments, shifting the entire pricing structure of vending machine contents and cafeteria meals has been shown to influence consumption, but the number of 'real world' examples (rather than research studies) is small and come from the US. This approach should be tested in different types of public and private sector settings in the UK. These pilots should also test whether price restructuring could be implemented in an economically viable way, or whether such approaches would always need external funding.

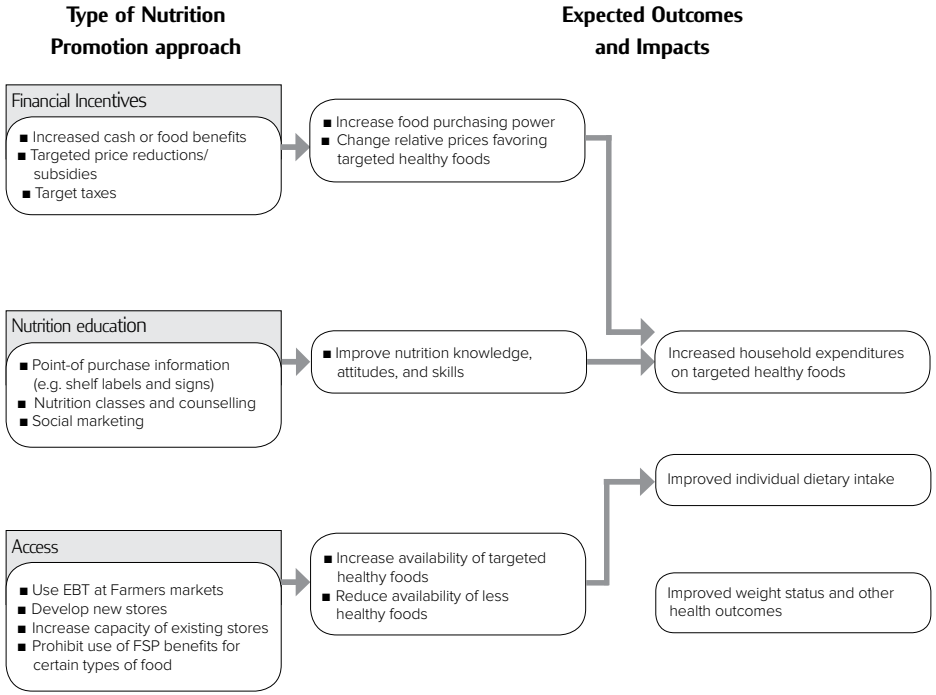
(12) Replacing value pricing with portion size pricing is not an incentive that has been adequately tested as a means of encouraging the selection of smaller portion sizes by consumers. In theory, governments could implement such an approach indirectly by taxing ingredients of products, thus reducing the incentive for food companies to implement value pricing. But it would be more straightforward for the food industry to implement on a voluntary basis. It is thus recommended that members of the food industry pilot this approach in conjunction with public sector researchers to test its feasibility and effectiveness.

(13) Evidence suggests, especially from the US, that vouchers have real potential to encourage healthier eating. Voucher schemes are also ripe for local application, tailored to local populations who are generally more difficult to reach with healthy eating messages. Given their own national schemes, the Department of Health and the devolved UK governments (in conjunction with the FSA where appropriate) should collate the evidence on voucher schemes, and, if the evidence shows they can work, develop national recommendations and good practice examples based on the evidence.

(14) Financial rewards have been particularly used to encourage healthier eating among children. Concern about the use of such schemes is warranted on the basis that 'bribing' children with rewards for eating has long been discouraged by psychologists. But some of these programmes are clearly working for fruit and vegetables and school meals. It is thus recommended that the role of rewards in fruit and vegetable consumption among children and school meal uptake be carefully considered for wider application.

(15) Providing food and health service providers with incentives is a very different type of financial incentive to consumer-targeted incentives. In many ways, provider-targeted incentives are different enough to be considered an entirely separate issue. But the evidence in this report suggests they have potential to influence food and health service provider behaviour in the 'supply chain'. Moreover, they can be used to create incentives for providers to develop and/or adopt financial incentives targeted at consumers. It is thus recommended that the creation of incentives for providers is considered in regard to how they can encourage the development and adoption of consumer-targeted incentives. In addition, financial incentives for providers to encourage healthy eating should be subject to the development of a separate strategy. Such a strategy could also consider incentives of a non-financial nature.

Figure 1 **Theoretical relationships between financial incentives, nutrition education, and food access, as conceptualised in the context of the SNAP (food stamp) programme in the United States**



EBT = Electronic Benefit Transfer;
FWP = Food Stamp Program.

Source:
GAO (United States Government Accountability Office). *Food Stamp Program: Options for Delivering Financial Incentives to Participants for Purchasing Targeted Foods*. Report to the Chairman, Committee on Agriculture, Nutrition, and Forestry, U.S. Senate. Washington DC, United States Government Accountability Office (GAO), July 2008.

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