Title page

1. Title: THE POTENTIAL ROLE OF TAXES AND SUBSIDIES ON FOOD IN THE PREVENTION OF OBESITY IN EUROPE.

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4. Keywords: nutrition policy, obesity, tax food, public health nutrition, pricing policy

5. Word count: 4337 words

Running title: Taxes and subsidies on food in Europe

Abstract

Objective: To explore the opinions of stakeholders on the potential of taxes or subsidies, as measures for tackling obesity in Europe.

Design: Structured interviews using Multi-criteria Mapping, a computer based decision support tool.

Subjects/Setting: 189 interviewees, drawn from 21 different stakeholder categories in institutionally matched groups across nine members of the EU.

Measurements: A four step approach was taken, i.e. selecting options, defining criteria, scoring options quantitatively and weighting the criteria to provide overall rankings of options. Interviews were recorded and transcribed to yield qualitative data.

Results: Taxation and subsidies were not favourably received, because they were considered difficult to implement. However, representatives of large commercial retail chains and public health professionals were most in favour of taxation, whilst representatives of public sector catering and nutritional/obesity advisory experts gave the most positive ratings to subsidies, and the trade unions rated both options more favourably than other stakeholder groups. In contrast, both options received their lowest scores from representatives of the farming industry, town and transport planners, the food processing industry and the advertising industry. Public health professionals were the stakeholders most frequently giving the highest scores (3/9 countries), both for taxation (Italy, Spain and France) and for subsidies (Spain, France and Poland). Finland produced the greatest number of interviewees rating both fiscal options favourably.

Conclusions: A decision to apply economic measures such as taxes/subsidies in the EU represents one possibly viable course of action, as part of an integrated and coherent public policy aimed at combating obesity.

Introduction

It is clear that the public health problem of increasing prevalence of obesity has been brought about by the convergence of powerful economic, environmental and cultural forces which promote weight gain among the population.[1,2] The tendency towards a gradual increase in obesity prevalence among the population, especially from the last two decades of the 20th century onwards,[3] reveals to what extent these external forces are capable of destabilising the natural biological regulation of energy balance. Consequently, it is naive to expect that the epidemic proportions obesity has reached can be reversed by strategies based exclusively on campaigns aimed at changing individual behaviour.

Fifty years ago, European food policies were aimed at establishing secure, adequate food supplies for the population, following the severe shortages of World War II. The economic policies ensured growth of the agricultural and food processing industries, and by the 1980s, policies were needed to deal with over-production of food in the European Union. Agricultural reforms were then designed to support producers but did not consider their health effects. In the 1990s, concerns turned toward food safety issues, as well as diet related diseases and the cost associated with such diseases, including obesity.

Imposing taxes on food, such as Value Added Tax, is a mean of raising general revenue in the European Union and may also serve to influence purchasing patterns. Food taxes could serve several purposes, ranging from attempts to directly influence behaviour to those which collect taxes to fund campaigns on healthy eating. The literature particularly centres on subsidies for production practices defined by agricultural policies, through subsidisation of certain crops in order to stabilise prices, support agricultural production and guarantee food supply.[4] However, objections have been raised in terms of the unintentional secondary effects such policies might produce.[2,5]

Technological developments over recent decades have lowered the cost of acquiring calories and increased the cost of expending these calories. Hence, the relative price between physical activity and calorie intake has changed, reducing economic incentives for maintaining a healthy balance between food intake and physical activity.[6] Economic factors have also helped to create an obesogenic environment.[7,8] Together, these two elements form the base from which it is possible to obtain larger portions of food for a given amount of money, and where sitting in front of a computer at work is associated with maximum productivity. Given this panorama, there is a growing interest in developing the best strategies possible for achieving healthy dietary habits.[9]

As a response to this concern, various proposals have been put forward, including public health campaigns, controls on advertising, promotion of healthy eating in schools, and food taxes and subsidies, among others. Heightened awareness of this issue produces positive results in the short term, as regards diet, physical exercise and body weight, but few, if any, of these changes are sustainable in the long term. Achieving and maintaining a healthy body weight in the present environment requires the support of policies from various sectors.

The World Health Organisation has recognised that controlling the price of healthy foodstuffs is a key factor in improving diet and preventing disease.[10] Within the European context, the European Health Network has called for a broad-based and integrated food policy, which would include policies for price control.[11] In addition, in the November 2006 European ministers signed a Charter in which they made a commitment to creating a balance between individual and social responsibility.[12]

The practice of taxing products as a health policy has a long tradition in public health, and has proved to be effective in controlling consumption and consequently improving health, as can be seen in the cases, for example, of alcohol[13] and tobacco.[14] The theoretical

foundation for using economic incentives to regulate dietary habits is the assumption that demand curves are downward sloping.

Price is an important factor for the consumer when choosing food. Consequently, it would be reasonable to assume that the population's dietary habits could be changed through the application of economic measures.[15] The idea behind modified food taxes or subsidies is to provide consumers with economic incentives to change their habits in line with nutritional recommendations, thus reducing the probability of being exposed to obesity and other health risks.[6]

However, the use of differentiated food taxes or subsidies in order to achieve nutritional objectives has not been widely employed in public policies, and thus empirical evidence on the effects is diverse, inconclusive and practically non-existent.

The dual aim of this paper, therefore, is firstly to address the need, identified by various authors[16-18] for consultation with key actors implicated in the issue of obesity, such as the food industry, health professionals and other sectors and organisations, and secondly, to analyse the viewpoints of all stakeholders on the implementation of public policies based on taxing obesity promoting food and subsidising healthy food, as part of a wider strategy to combat obesity in the European Union.

Methods

Multi-criteria mapping (MCM)[18,19] is a novel decision-analysis technique used to provide an integrated, comparative analysis of the different viewpoints of key stakeholders. In this study it was used to appraise two obesity-related policy options: taxes on obesity promoting foods and subsidies on healthy foods.

MCM provides information not only on how different options are expected to perform, but also on the reasons for those appraisals, and is described in detail elsewhere.[19,20] Quantitative and qualitative data were gathered from a large number of stakeholders to ensure that a comprehensive range of views was mapped. The nine national teams contributing to the Policy Options for Responding to the Growing Challenge of Obesity Research (PorGrow)[21] project selected 21 stakeholder categories to be interviewed in each of the countries (Cyprus, Finland, France, Greece, Hungary, Italy, Poland, Spain and the United Kingdom), representing actors and institutions which may play an important role in policymaking, either directly or through networks of influence. It is possible to combine these categories into stakeholder affinity groups sharing common commercial, corporate or professional interests. These groups were called “Perspectives” in order to enhance the analysis, and they were characterised as shown in Table 1.

The countries were chosen to encompass Europe’s contrasting economies, gastronomies, geographies and cultures. The stakeholders were chosen to encompass those groups likely to be essential in, or important to, an effective policy network.

Table 1. Interviewees grouped by perspective for analytical purposes

Perspectives	Category
A. Public interest non-governmental organisations	7 Representatives of consumer groups 19 Public health non-governmental representatives 20 Public interest sport and fitness NGOs 21 Representatives of trades unions
B. Large industrial and commercial food chain organisations	1 Farming industry representatives 2 Food processing company representatives 3 Representatives of large commercial catering chains 4 Representatives of large food retailers
C. Small food and fitness commercial organisations	5 Representatives of small 'health' food retailers 13 Representatives of commercial sport or fitness providers
D. Large industrial and commercial non-food organisations	12 Representatives of the life insurance industry 17 Representatives of the advertising industry 18 Representatives of the pharmaceutical industry
E. Policy-makers	8 Senior official government policy makers in the health ministry 9 Senior official government policy makers in the finance ministry
F. Public providers	6 Representatives of public sector caterers 11 Town and transport planners 14 Representatives of school teachers
G. Public health specialists	10 Public health professionals 15 Members of nutrition/obesity advisory committees 16 Health journalists

To select the individual interviewees, national teams used both an exhaustive web search (using as key words the translation into local languages of the stakeholder categories previously agreed) and a snowball approach using information gathered from key informants and identified stakeholders. The aim was to select stakeholders at the highest national level, who were involved in corporate or public policy-making and could act as spokesperson for their stakeholder category. The project coordinator (EM) ensured that there was sufficient comparability of stakeholder roles between countries by discussing issues surrounding cross country comparisons of the identified stakeholders' national roles with the participating teams.

Once the candidates for interview had been identified, they were contacted by telephone and sent an invitation letter, along with a leaflet in the local language containing information on the project. When the selected stakeholders agreed to participate, a second package with information on MCM methodology and an example of a previous mapping exercise on energy options was sent by post. They were contacted again by telephone to address any remaining questions, giving further information where necessary, and to arrange a time and place to conduct the 2-3 hour interview appropriately, that is, without interruption. This process is known as 'scoping'.^[19] The interviews were conducted following a common procedure which included tape-recording, the use of special software developed specifically for the project, and adhering strictly to the procedures described in the interview manual (http://www.sussex.ac.uk/spru/documents/02_mcm_interview_manual.pdf).

The MCM interview consists of four steps. Firstly, participants selected and defined a set of policy options that they would evaluate. Prior to the formal start of the project, an attempt was made to identify as wide a range as possible of the policy options under consideration by public policymakers and public health policy analysts for addressing the increasing incidence of obesity. The scope of this investigation ranged from international organisations such as the World Health Organization and the European Commission, and the governments

of European Union (EU) Member States, to national and EU NGOs representing industrial, commercial, consumer and public health organizations.

Thus, before the project's initial launch meeting in September 2004, inter-partner exchanges had produced a set of some 28 policy options from which core and discretionary options could be chosen. All partners from the nine participating countries were asked to indicate which of those options could sensibly be considered as relevant to their national contexts. The resulting set of options was then divided into two subsets: namely those that were candidates for the role of "core options" and those that were candidates for the role of "discretionary options", and these were tabled by the principal investigator (EM) at the first project meeting.

Debate produced a consensus list of seven core options and 13 discretionary options. For each policy option, three levels of description were developed: a summary phrase, a longer phrase and a full description so that interviewees would have a clear understanding of the options that they were being required and/or invited to appraise. The resulting list is shown in Table 2.

Table 2. The 20 predefined (Core and Discretionary) options* and their groupings into clusters of options for analytical purposes

Cluster	Options
A. Exercise and physical activity-oriented	1. Change planning and transport policies 2. Improve communal sports facilities 20. Increase the use of physical activity monitoring devices
B. Modifying the supply of, and demand for, foodstuffs	4. Control sales of foods in public institutions 6. Provide subsidies on healthy foods 7. Impose taxes on obesity-promoting foods 11. Control the composition of processed food products 12. Provide incentives to improve food composition 14. Provide incentives to caterers to provide healthier menus
C. Information-related initiatives	3. Controls on food and drink advertising 5. Require mandatory nutrition labelling 19. Control the use of marketing terms
D. Educational and research initiatives	8. Improve training for health professionals 10. Improve health education for the general public 13. More obesity research 15. Include food and health in the school curriculum
E. Technological innovation	16. Medication for weight control 17. Substitutes for fat and sugar
F. Institutional reforms	9. Common Agricultural Policy reform 18. New government body

* Core options are options 1-7, and Discretionary options 8-20.

For the purpose of this article, we have specifically focused on the valuation of all those interviewed on the choice of two public policies:

1. **Taxes on obesity promoting foods:** Change food prices to influence people's dietary choices by increasing the price of obesity promoting foods, including those high in fat and sugar, as a disincentive for consumers to purchase them. Methods for increasing the price of obesity promoting foods could include a "fat tax", or extending Value Added Tax to cover some dairy foods, fast food and sweet food, and
2. **Subsidies on healthy foods.** Public subsidies on healthy foods to improve patterns of food consumption: Change food prices to influence people's decision making in favour of healthier foods by introducing subsidies to lower the prices of healthy foods, making them more affordable.

Secondly, a set of evaluation criteria were introduced by each interviewee to represent their particular viewpoints. The “criteria” are the different factors that the interviewee has in mind when they choose between, or compare, the pros and cons of different options. These may address any issue that has relevance to their assessment of the performance of any of the options, but the criteria must be applied equally to assessment of all the options.

Thirdly, options were evaluated according to each criterion and numerical scores were given by the interviewees: the higher the score, the more optimistic the interviewee felt about performance of the appraised option. Interviewees expressed their judgements of uncertainty as regards the performance of the options by awarding both an optimistic and pessimistic score to each option.

For purposes of analysis and comparability in this section, we selected the criteria from which taxes on obesity promoting foods and subsidies on healthy foods options were highlighted when compared with the other options.

Fourthly, a quantitative weighting was assigned to each criterion, in order to reflect its relative importance according to the viewpoint in question. Using a simple formula, the scores under each criterion were multiplied by the criteria weightings to produce an overall pessimistic and optimistic relative ranking for each option.

Interviews were audio recorded and transcribed, as the reasons provided by interviewees for their judgements were considered to be as important as their quantitative judgements. Once the interviews were completed, different techniques were used to keep in touch with the stakeholders and obtain feedback for incorporation in the results.

In order to facilitate data analysis, a separate specialist software package called MCM Analyst was developed at the University of Sussex, as part of the PorGrow project. This

includes a relational database containing all data relating to all participants, interlinked with textual reports for representing relevant sections of the qualitative data in graphics and narrative forms.

Finally and for analytical purposes, in order to facilitate comparisons between the appraisals made by different stakeholders, and for the purposes of this article, the appraisal options tax/subsidies were compared according to stakeholders, the country of origin, and the selection criteria considered by those interviewed in their assessment.

Results

As can be seen in Figure 1, the findings indicate that a wide array of policy measures, integrated into a coherent programme, would be well supported by stakeholders. Educational options focusing both on school children and the general adult population were the most popular.

On average, the 189 European stakeholders consulted in the 9 participating countries gave a low rating to economic measures involving taxing obesity promoting food. Subsidising healthy foods received a slightly higher rating than taxes, but implementation of either option was perceived to be limited by unfavourable contexts.

Nevertheless, when results for taxes were analysed further by stakeholder profile, it was seen that three categories of interviewees had given scores slightly over 50, on a normalised 0-100 scale. These categories were: representatives of large commercial retail chains, public health professionals and trade unions (see Figure 2). Although they did not provide many supporting arguments, they based their assessment on the importance of price in determining shopping habits.

As for subsidies, representatives from the public sector catering, expert nutrition/obesity advisory committees and trade unions gave the highest scores. The reasons given for their optimistic evaluations were that it was technically easy to put in place once the political will was there, that it would benefit some food manufacturers, and that subsidies would be widely accepted by citizens as they would lead to cheaper prices and enable better access to 'healthier' subsidised foods for lower socio-economic groups.

Among the arguments forwarded in this respect were:

“Today people have such economic problems that knowing that a food costs more not because of its quality but because it is unhealthy would be a strong disincentive”. (Italy, Trade Unions)

“100% support! It is costly, but money is in another pool” (Poland, Commercial sport or fitness provider).

On the other hand, the lowest scores for both taxes and subsidies were given by representatives of the farming industry, town and transport planning, the food processing industry and the advertising industry. Among the reasons they gave for their assessments were the importance of the free market and freedom of choice for the consumer:

“... I don't really like either subsidies or extra taxes: these interventions distort market conditions, and won't work. Policies like that have just never worked out. Market mechanisms should be left undisturbed; the demand for healthy products should be raised by telling people about the dangers of obesity and the benefits of healthy products, but in the end, the actual decision (what to buy) should be left to them”. (Hungary, Food processing Co.)

“It is not considered that a specific economic policy would have any influence on trends in what people eat” (Spain, Consumers)

“... I feel that it would be difficult to create a scheme of potential subsidies based on what is healthy or not. The criteria need to be a lot more specific; otherwise there will be confusion in the market. The competition committee will react strongly against it, because by subsidising some products on the basis that they are healthy they automatically consider all the rest as unhealthy.” (Greece, Town planner)

“A very bad idea (subsidies), incredibly expensive, there will be many ways to abuse the system. It may have positive effects, but at an incredibly huge cost”. (Hungary, Finance Ministry)

In addition, some interviewees felt that this classification would imply dividing food into two categories; good and bad, and that it is the overall diet, rather than specific products, which

cause obesity. In this case, the principal difficulty would be in identifying which foodstuffs should be taxed or subsidised.

“Penalizing fat with taxes is a difficult question. We have to eat between 15-20% fat, so what are they going to penalize? Normal food? It all depends on the quantity you eat...” (Spain, Food processing Co.)

“Taxing high fat foods: I am from the Périgord [region]: my duck fat, my foie gras; listen, you make me want to cry! It’s a tax on fat that is absolutely good for you...but it is just a question of quantity.” (France, small food and fitness companies)

Furthermore, the interviewees indicated the implications of taxing obesity promoting food, pointing out the possible negative impact of this tax on low-income individuals and families, for whom food constitutes their principal outgoings.

“I think it’s a very regressive tax because it’s taxing people with less money, because people with less money are more likely to buy high fat, high sugar foods. And also, I think the [effect of] price (on) demand for fat is probably pretty low, I think it’s a pretty elastic demand for fat, so I don’t think it’ll make much difference.” (UK, insurance industry)

Moreover some of those interviewed (usually those who gave this option lower scores) considered these measures to be a target for manipulation by industry, with potential for corrupt practice.

“...This would not change eating habits, and producers and vendors will always find the loopholes to circumvent regulation.” (Hungary, Farming industry)

“Lovely idea, but the subsidy system would cause more damage – temporary effect but creating opportunities for many abuses” (Poland, advertising industry)

Differences between interviewees by country

As can be seen in Figure 3, when the results were analysed by country, differences in appraisals became apparent. Some representatives of specific areas in each country were

in favour of the taxation option as a public policy, with scores close to or over 80 on a scale of 0 to 100. In Finland, 5 of the 21 interviewees gave high scores to the taxation option. In the remainder of the countries, 2 interviewees per country gave high scores, except in Poland, where no high scores were given for this option.

As regards the possibility of subsidising healthy food, 6 interviewees from Finland gave high scores, followed by Poland and France with 3 interviewees per country.

The stakeholder category which produced high scores with most frequency (3/9 countries) was that of public health professionals, both for taxes (Italy, France and Spain) and subsidies (Spain, France and Poland) .

Appraisal of options according to different criteria

The approach of manipulating food supply through fiscal measures gave a mixed pattern: taxes on obesigenic foods generally scored poorly, especially in terms of cost to individuals, but were seen as being favourable to public sector finances, particularly by Greece.

Furthermore those stakeholders who were critical of the measure at the same time accept that there are some positive aspects to the tax option: there were possible gains to be made in terms of social benefits (e.g. reduced inequalities, depending on how the measures were applied) and extra health benefits. On these criteria, Finland was the country that gave highest scores to the tax option. Conversely, subsidies for healthy foods were recognised as being a cost to the public sector but not a cost to individuals or for the commercial sector.

Furthermore, as can be seen in figure 4 all bars cramped over to the left by the contribution of the selected criteria to the overall appraisal. As regards the cost to individuals, Finland, Greece and Poland were the countries which gave more positive scores to the subsidy option, while Cyprus, followed much further down the list by Greece and Hungary, gave more favourable scores to costs for the commercial sector.

“Pricing policy is a powerful tool for changing behaviour.” (Finland, public sector services)

Finally, the participants expressed that, as with many other options, a successful strategy requires consumer education and health promotion for maximum benefit:

“This strategy could be combined with nutritional labelling or the use of the traffic light system so that those products which are unhealthy could be labelled with a red “unhealthy” sign.

Thus, it will be up to the consumers to buy them or not.” (Greece, sports providers)

“It is preferable to educate the population about the fact that there are some foods that can be consumed generously but others only in moderation, rather than penalizing through taxes according to this classification”. (Spain, health ministry representative)

Discussion

Not all stakeholders are opposed to the implementation of taxes/subsidies as part of a broad-based strategy to combat obesity. Our study shows that a decision to apply economic measures such as taxes/subsidies in the EU represents one possibly viable course of action, as part of an integrated and coherent public policy aimed at combating obesity, but under certain conditions. Implementation, support and repercussions will be determined by social forces, commercial interests and the standpoint of policy makers in each country.

Obesity implies costs not only for the individual but also for society in general, the multiple consequences and projection in time of which may be underestimated and inadequately considered in decision-making related to diet and physical exercise.[16,22] In the present environment, food is characterised by an abundant choice, relatively cheap prices, high calorific content and large portions.[23] This, together with a sedentary lifestyle and low levels of physical activity, constitutes an obesogenic environment and implies that, unless measures are taken, obesity rates will continue and possibly even increase. Furthermore, various studies have shown that patterns of food consumption, unhealthy eating habits and problems of obesity vary according to age, level of education and region.[24]

Epidemiological patterns of obesity indicate that social structures influence weight distribution.[17] The debate has polarised between two positions; those who support the argument based on individual behaviour,[25] and those who see the solution in more structural terms.[26] The latter (structuralists) are more likely to support food taxes, whereas those who see the individual as primarily responsible are more likely to reject taxes.[27] This polarisation is reflected in the results of this study, where positive scores were recorded by representatives of large commercial retail chains, expert nutrition/obesity advisory committees and trade unions, and negative scores were recorded by representatives of the farming industry, town and transport planning, the food processing industry and the advertising industry.

However, imposing food taxes has traditionally been unpopular among the general population. Concerns expressed by some stakeholders in this study that taxation would fall disproportionately on low-income consumers seems to be unfounded,[2,6] particularly if taxation is not limited to a single nutrient or food, and is balanced by reduced taxes, or subsidies on other foods. The implementation of taxation on a certain category of food, group of foods, or method of preparation as a public policy mechanism for controlling calorie consumption is not generally viewed as either a priority or as favourable to dealing with the obesity epidemic. Nevertheless, there are significant differences as regards eventual implementation by sector (e.g. the food distribution industry and public health professionals) and by country, Finland being notably more in favour than other countries. Finland, Norway and Sweden constitute the three Scandinavian countries with a longer tradition of adopting centralised political measures with regard to nutrition and food. Norway enacted its first nutrition plan of action in 1976, and Finland in 1989, where fiscal measures were adopted as a strategy for achieving the nutritional objectives outlined by the plans, using a combination of food subsidies, price manipulation, retail regulations, clear nutritional labelling and public education focused on individuals.[28,29]

As suggested by the arguments put forward by international organisations (the WHO and IOTF), econometric studies in several countries indicate that prices do have an impact on patterns of food consumption.[6] Nevertheless, although it is possible to find a wide range of taxes on food products, these have usually been implemented with a view to raising national revenue rather than with the aim of influencing dietary habits and improving health.[27,30] Available evidence relating to the use and impact of food taxation on dietary habits is inconclusive, and is limited to retrospective descriptions, or to short periods of time, due to lobbying from the industry.[27] The effects of subsidies differ according to whether they are applied to supply[5] or demand.[31] Some studies demonstrate the advantages of applying subsidies to demand for specific food products in local action programmes.[32] The effect on health, as a public policy measure, has been studied to a lesser degree.[31]

Cost can be considered the main argument in favour of public intervention from a strictly economic perspective, implying that price influences demand in food consumption. Some authors suggest that rather than applying fiscal measures such as food taxes and subsidies in order to combat obesity, subsidies for the production of basic foodstuffs should be withdrawn, as these distort the EU's common agricultural policy (CAP). That is to say, that those foodstuffs whose production is currently subsidised are precisely those for which food taxation is being proposed. A step in the right direction was the 2003 CAP reform, the main aim of which was to bring supply in line with demand.[33]

Finally, and taking into account the methodology used in this study, caution should be exercised when interpreting the results; the final map of options corresponds to averages between the ranges of all participants, with variations in scoring under different criteria for each participant and between participants when the categories are combined. A loss of accuracy in the information is therefore unavoidable when aggregating and averaging. Additionally the position of different stakeholders could have been influenced by their commercial interests and/or their professional expertise. However, a quantitative check indicated that omitting potentially self-serving judgements changed the overall outcomes by no more than +/- 1%.[34]

In conclusion, although stakeholders in the political network influencing obesity are not, when viewed as a collective, in favour of the application of economic regulation at the present time, neither is there consensus against implementation of these measures. The standpoint of stakeholders is influenced by their interests and by their expectations of the costs of regulation. In addition, the political culture of each country would seem to have a significant influence on the position of the various stakeholders. Investigation into fiscal measures applied to food as a means of controlling obesity should not be abandoned.

What this paper adds

The practice of taxing products as a health policy has a long tradition in public health, and has proved to be effective in controlling consumption and consequently improving health, as can be seen in the cases, for example, of alcohol and tobacco.

Price is an important factor for the consumer when choosing food. Consequently, it would be reasonable to assume that the population's dietary habits could be changed through the application of economic measures. The idea behind modified food taxes or subsidies is to provide consumers with economic incentives to change their habits in line with nutritional recommendations, thus reducing the probability of being exposed to obesity and other health risks.

To apply economic measures such as taxes/subsidies in the EU represents one possibly viable course of action, as part of an integrated and coherent public policy aimed at combating obesity, but under certain conditions.

Acknowledgements

Supported by New and Emerging Science and Technology (NEST) research programme, financed by the 6th Framework Programme for research and technological development of the European Commission (contract no.508913). The content of this publication is the sole responsibility of its authors and does not necessarily reflect the views or policies of the NEST research project or the European Commission.

The research team is greatly indebted to all European stakeholders who participated in the project and devoted their precious time to the project. The research team wish to express their sincere thanks to the national PORGROW teams for to share their cross-national PorGrow database, and our partners Patrik Borg from UKK Institute for health Promotion Research (Finland), Savvas C Savva from Research and Education Institute of Child Health (Cyprus), and Lucjan Szponar from National Food and Nutrition Institute (Poland).

This paper will be used as part of Laura I Gonzalez PhD training programme and dissertation at the University of Alicante- Spain

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Rank Means for All Participants