CONCEPTUALIZING THE POSSIBLE IMPLEMENTATION OF FOOD TAXES IN DEVELOPED ECONOMIES: CASE OF LATVIA

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Abstract: Broad system of taxes on unhealthy foods, possibly combined with subsidies for certain healthy foods is one of the public health policy directions. This paper assesses possible rationales for such a tax, examining arguments and historical development of health taxation in Latvia. The aim of study is to examine rationales for tax, including behavioural issues and develop proposals for the future development in Latvia. The conventional quantitative and qualitative data analysis methods of economics as well as inductive and deductive research methods were used. Proposals for the possible food tax system as a part of health financing model had resulted from this research.

Keywords: unhealthy food tax, taxation, health policy, excise tax on junk food.

1 Introduction

General tax revenues are important source of public spending and "sin taxes" – taxes on alcohol, tobacco have long been an important mean for raising revenues and reducing harmful targeted product consumption. Over the last decade politicians and scientists have shown additional interest on using of excise taxes on unhealthy products to achieve public health goals and reduce consumption of foods, such as sugar sweetened beverages and other targeted products. While the use of "sin taxes" on alcohol beverages and tobacco for fiscal and health policy purposes, changing consumers' behaviours is well-established, we have founded only few publications which synthesize research on "health tax" policy issues. Another question is whether and to what extent the revenues generated by specific taxes are sufficient for health-related spending. Earmarked ("hypothecation") revenues does not guarantee that overall spending for health promotion and prevention will be increased, partly because these measures are perceived to be less urgent, and partly because they tend to lead to the results over the longer term, making them less attractive for political process. There is no reason why revenues from a tax will match the funding needs of a corresponding public health effort. For example, the optimal subsidy for healthy foods might require twice as much money as a tax provides or only one-half. Linking the two policies too tightly may require compromising on one or both. Moreover, the imposition of a tax that improves public health by changing behaviour does not imply that the revenue should also be used to improve public health. Governments have many other useful ways to use their revenue. They may prefer to help people with low incomes (thus offsetting some of the regressivity of the tax), reduce taxes that weaken economic growth, invest in new opportunities that may or may not be related to health. This paper represents the review of experience with studying arguments and historical development of the tax system of health care. It seems obvious that broad system of taxes on unhealthy foods, possibly combined with subsidies for certain healthy foods, is one of the public health policy directions. This paper assesses possible rationales for such a tax, examining arguments and historical development of health taxation in Latvia. The purpose of the study is to examine rationales for taxation, including behavioural issues and develop proposals for the future development in Latvia. The conventional quantitative and qualitative data analysis methods of economic data, as well as inductive and deductive research methods were used. Proposals for the possible food tax system as part of health financing model had resulted from the study.

2 Tax policy general considerations and countries' experience

Over the last few decades there has been a growing international trend towards development of taxation of unhealthy products and research devoted to this policy. Taxes on unhealthy products or "sins" such as alcohol, tobacco, certain foods and beverages are widely used. Historically, the primary objective of these taxes has been fiscal revenues to be generated, but nowadays policy and research interest in the ability of such measures to raise the cost of manufacturing, distributing and consuming of these products is increasing. Taxes imposed on consumed goods can be collected from manufacturers (as taxes on ingredients), distributors, retailers, or consumers (as sales or excise taxes on finished products). In several countries governments have employed taxes on alcohol and tobacco to promote reduced consumption (Wright et al. 2017). More recently, since 2010, countries including Finland, Denmark, Hungary, France, Mexico and England, have introduced sales taxes on foods or beverages deemed unhealthy. Food taxes are generally categorized as "junk food" or "fat" taxes, but while similar, only the latter attempts to modify behaviour (Fox et al. 2017, Roache & Gostin 2017). The intent of the "junk food taxes" seems to be used to promote healthier food choices, through reduction of consumption or usage of earmarked revenues for public health promotion to educate and inform the public about healthy diet. Regarding the "fat taxes", in general, this type of taxes is applied to foods considered to be high in fat or unhealthy. Many of the present-day food taxes were enacted without health concerns in mind. However the health impact of particular foods is subject to scientific uncertainty and often depends heavily on the other components in each individual's diet. Disease responses to food products are non-linear in quantity consumed and vary substantially across individuals. Individuals also are heterogeneous with respect to their preferences and self-control. A food tax scheme will result in an industry response and may spur both constructive and detrimental innovation.

The traditional view in economics has been that taxation can have a corrective role only if consumption causes negative externalities. However, recent literature on behavioural economics has shown that consumers sometimes make sub-optimal decisions even from the point of view of their own welfare. Consumers often behave myopically, and therefore consume too much of goods with delayed negative effects – excess consumption of unhealthy food and the resulting rise in obesity rates is an important example of this type of behaviour (O'Donoghue & Rabin 2006). Taxation can potentially be used to counteract this tendency for over-consumption. Relatedly, Lusk & Schroeter (2012) argue that policies such as the soda tax are hard to justify unless traditional rationality assumptions are relaxed. On the other hand, even if one dislikes paternalism in general, heavy taxation of unhealthy food may be justified by externalities arising through higher public health care expenditures, as well as by the need to protect children from the long-term consequences of their parents' unhealthy lifestyles (Brunello et al. 2009). Some studies (Allais et al. 2012; Cavaliere et al. 2017) also proposes analysis of the cost-effectiveness of conservative scenarios for two commonly proposed policy-based interventions: front-of-pack 'traffic-light' nutrition labelling (traffic-light labelling) and a tax on unhealthy foods ('junk-food' tax).

An unhealthy good causes health issues in the long run. It creates a misperceived utility loss and increases health care costs.

Conversely, a healthy good provides misperceived utility gains and reduces health care costs. People underestimate their future health costs from secondary disorders and, thus, choose unhealthy diet and weight. Individuals differ in income and in their degree of misperception; they vote over a fat tax according to their misperceived utility. A fraction of the tax proceeds is "earmarked" to reduce health insurance premiums; the remainder finances a subsidy on the healthy good. This earmarking rule is determined to maximize welfare, anticipating the induced political equilibrium. (Cremer et al. 2016). From policy making view the strongest role for a broad, health-based tax on foods would be as a health-insurance system component. Ideally, the tax amount would approximate the expected medical cost from consuming each unit of food, and the tax revenues would cover claims for the associated disease conditions as they arose. This tax - claim system could serve for major purposes. First, it would reduce moral hazard by causing individuals to make ex ante payments covering the expected covered costs of risky eating behaviour. Second, it would address the incomplete markets problem that consumers are restricted to short-term coverage by introducing a long-term component into the system. Third, it would aid in separating inherent risk over which individuals have no control from risk that is a function of behaviour. However as shown by (Mazzocchi et al. 2014) the main drivers of policy support are attitudinal factors, especially attribution of obesity to excessive availability of unhealthy foods, while socio-demographic characteristics and political preferences have little explanatory power. A high level of support for healthy eating policy does not translate into acceptance of higher taxes to fund them. The economic concept of externalities offers one way to think about appropriate tax levels. Externalities arise when consumer and business choices impose costs on third parties. Pollution from a power plant is a classic example; emissions harm people who have no role in purchasing or producing the electricity. With nutrition, the primary channel for potential externalities is through health insurance. Unhealthy foods and drinks can increase health care costs; insurance then spreads those costs across everyone in the same pool (if private) or across taxpayers (if public). Consumers have no reason to consider those spillover costs when they decide what to eat and drink. A tax can act as a proxy for those costs, however, leading consumers and businesses to make more efficient eating and drinking choices. The externality approach would thus calibrate taxes to any overlooked health care costs that would be passed on to other people through health insurance.

A newer approach, based on knowledge of behavioral economics, goes further and suggests that such taxes should also reflect any internal harms that people overlook (Marron et al. 2015). Such internalities occur if people make eating and drinking choices without being fully aware of the possible damage to their health. Taxes on unhealthy foods and drinks can proxy for those overlooked internal costs, just as they can for any external costs. The internality approach would thus calibrate taxes to any overlooked costs, whether borne by third parties or by consumers themselves.

In accordance with both approaches, appropriate tax levels might then be adjusted up or down based on distributional concerns. If taxing externalities would be highly regressive, for example, policymakers might choose a tax smaller than the externality. Under the internality approach, moreover, policymakers might also consider the welfare of people a policy is trying to help. From that paternalistic perspective, taxing unhealthy foods and drinks poses a tradeoff. Taxes can improve the health of people who do not account for potential health effects when making eating and drinking choices, but they also reduce enjoyment from eating and drinking and represent a new financial burden. As a result, the optimal paternalistic tax may be significantly less than the amount of the overlooked internal costs (Marron et al. 2015).

Franck et al. (2013) examined the advantages and disadvantages of implementing a junk food tax as an intervention to counter increasing obesity in North America. It seems approved that small excise taxes are likely to yield substantial revenue but are unlikely to affect obesity rates. However high excise taxes are likely to have a direct impact on weight in at-risk populations but are less likely to be politically palatable or sustainable. Ultimately, the effectiveness of earmarked health programs and subsidies is likely to be a key determinant of tax success in the fight against obesity. Madden (2015) shows that to combat growing levels of obesity, health-related taxes have been suggested with taxes on foods high in fat or sugar. Such taxes have been criticised on the basis of their regressivity and potentially adverse impact upon poverty. Madden analyses the effect of such taxes on a range of poverty measures and also examines the effect of a revenue-neutral tax subsidy mixed with a tax on unhealthy food combined with a subsidy on more healthy food. Using Irish expenditure data, the results indicate that taxes on high fat/sugar goods on their own will be regressive but that a tax-subsidy combination can be broadly neutral with respect to poverty. Based on our own calculations and interviews with experts we can agree that despite short-term impact on household spending in the long run, changes in behaviour lead to changes in food demand and health outcomes. It is observed that taxation of sugar could lead to a statistically significant reduction in both the incidence of type 2 diabetes and coronary heart disease. The health effects appear to be most pronounced for low-income individuals, and the reforms may therefore reduce health inequality. This effect undermines the traditional regressivity argument against the heavy taxation of unhealthy food.

3 Tax base consideration

As a countermeasure against obesity and overweight, many countries have implemented taxes on unhealthy food, for instance, the soda taxes in France, Hungary, Mexico, Ireland and UK, the sugar tax in Norway and the fat tax in Denmark. In practice, the stated aim of implementing such sin taxes on unhealthy food is to reduce the prevalence of obesity. World Health organization experts (WHO 2016) argue that "evidence shows that a tax of 20% on sugary drinks can lead to a reduction in consumption of around 20%, thus preventing obesity and diabetes."

Chilean experience (Cremer et al. 2016) shows that a tax on the same foods and beverages already delineated as unhealthy by the marketing controls and front-of-pack labelling should promote a healthier diet. To reduce obesity, diabetes and most other non-communicable diseases (NCDs), causing significant costs to societies and individuals tax base analysed included sweets and desserts; salty snacks and chips; meat products and fats; fruits, vegetables and seafood; grain-based staples; ready-to-drink SSB; SSB from concentrate; plain water, coffee and tea; and milk, which together represent 90% of food expenditures. Possible discussed taxes are 18% price tax on all foods and beverages exceeding thresholds on sodium, saturated fat, and added sugar and for which marketing is restricted (based on a Chilean law, effective June 16, 2016); 40% tax on SSBs (22% above the current tax level); and a 1 Chilean peso (0.2 US cents) per gram of sugar tax on products with added sugar. Chile is unique in currently having instituted a small current SSB tax as well as marketing controls and front-of-package labelling of unhealthy foods and beverages. The design of a more comprehensive tax to enhance the overall effect of these policies on healthier diets is a next critical step. The Danish fat tax (Bødker et al. 2015) had a marginal effect on population consumption of fat and risk of ischaemic heart disease (IHD). Examined effect of the Danish fat tax on consumption patterns and IHD risk shows that the total sales of twelve taxed foodstuff categories decreased by 0.9%, the intake of saturated fat, unsaturated fats and dietary cholesterol decreased and the risk of IHD decreased by 0.3%. Based on Danish taxation experience it can be concluded that fat taxes have to be carefully designed to prevent possible adverse effects from outweighing its beneficial effects on health outcomes. Policymakers must therefore be more ambitious in relation to food taxes, e.g. by implementing more comprehensive tax-subsidy schemes. Another decision making risk shown by Danish experience is related to the implementation process and rapid abolition of the fat tax. Findings (Backholer et al. 2017)

suggest that industry and trade associations were heavily involved in the political process of formulating the fat tax. Industry representatives used certain tactics to oppose the fat tax: threatening lawsuits, predicting welfare losses, casting doubt on evidence, diverting focus and requesting postponement. However, the fat tax received criticism for being poorly designed and gradually lost popularity among health professionals, politicians and the public. In the end, the fat tax was abolished for financial reasons. Denmark's experience with fat taxes speaks to the difficulty of imposing them, while also illustrating the impact of consumer tax avoidance on the local economy. Denmark was the first country in the EU to enact a health-related food tax levied taxes on confectionary items and soft drinks from 2008 to 2010 (Wideback et al. 2011). In the last few years the list of countries that have implemented a soda tax, or plan to, has grown rapidly (Cornelsen et al. 2018). Table 1 illustrates experience on health related food taxes introduced by different countries.

Table 1. Examples of health related food taxes

Country	Date introduced	Foods taxed	Tax rate
US	Various	Sugar sweetened drinks (in 23 states)	1- 8%
Norway	1981	Sugar, chocolate, and sugary drinks	Variable
Samoa	1984	Soft drinks	(€0.14 per liter
Australia	2000	Soft drinks, confectionary, biscuits, and bakery products	10%
French Polynesia	2002	Sweetened drinks, confectionary, and ice cream	€0.55 for imported drinks
Fiji	2006	Soft drinks	5% on imported drinks
Finland	2011	Soft drinks and confectionary	
Hungary	2011	Foods high in sugar, fat, or salt and sugary drinks	10 forint per item
Denmark	2011	Products with more than 2.3% of saturated fat: meat, dairy products,	Kr16/kg (€2.15) of saturated fat, animal fats, and oils
France	2012	Drinks containing added sugar or sweetener	€072/L

Source: Authors constructed based on (Mytton et al. 2012; Bíró 2015; Bergman & Hansen 2016; Hagenaars et al. 2017; Härkänen et al. 2014; Marron et al. 2015) and involved countries experience.

Based on countries experiences (Wright et al. 2017) tax policy construction question also is on who is responsible for sending payments to the government, and determination of who ultimately bears the tax. If taxes are levied on businesses, they may absorb it in reduced profit margins, increase prices to pass some or all of it through to consumers, or bargain with workers and suppliers to pass some of it back onto them. If taxes are levied on consumers, businesses may keep their prices steady or may lower prices to offset some or all of the taxes consumers face. In relatively competitive markets, the interplay of demand and supply determines how taxes get shifted, with the less price-responsive side of the market bearing more of the tax and the more price-responsive side bearing less. In less competitive markets—those having just a few major sellers—tax shifting also depends on how those sellers interact. Businesses with market power may absorb much of the tax, may shift it to consumers, or may even over shift, increasing retail prices by more than the tax. The magnitude of such shifting or over shifting depends on how the firms compete and how the tax is designed. Studies typically find that businesses pass on a large fraction of excise taxes they pay and do not reduce prices very much when taxes are levied on consumers. (Signal et al. 2017). Consumers thus bear most of sales and excise taxes via higher prices, and businesses bear relatively little of the burden through lower profit margins. In some cases, profit margins expand, with businesses raising prices more than the taxes. There are some exceptions, however; cigarette taxes are not fully passed on to consumers according to the most recent literature (Fox et al. 2017; Bergman & Hansen 2016). Studies of nutrition-focused taxes have generally confirmed substantial pass-through and, in some cases, over-shifting. For example, excise taxes are more likely to be over shifted than sales taxes (Bergman & Hansen 2013). Taxes can be calibrated in several ways, focusing on content, volume, or sales. Those choices have different implications for reducing unhealthy eating and drinking (Caro et al. 2017). If policymakers want to use taxes to reduce health risks, the most efficient approach is to target harmful product characteristics. If calories are the problem, the tax should be on calories. If sugar is the problem, the tax should be on sugar. And so on. Such targeting encourages consumers to reduce the amount of harmful ingredients they consume and encourages businesses to offer healthier products.

One additional concern is the administrative cost of implementing different tax regimes. Taxes that parallel a jurisdiction's existing tax structure may be easier to collect. If a government already levies a retail sales tax, for example, it may be less costly to implement a nutrition-focused tax at a different sales tax rate, rather than on volume or ingredient contents. Policymakers will have to balance such administrative concerns against the benefits of better targeting such taxes. Denmark's short-lived fat tax targeted saturated fat. But the tax was levied on saturated fat used in production, rather than the amount in food itself, and flat rates were used for meat categories (e.g., beef, chicken, pork) independent of the saturated fat content in specific products (Bødker et al. 2015). The tax thus did not closely track the actual content of saturated fats. Another approach would be to categorize food and beverages on a broad healthiness scale and tax those found insufficiently healthy (Engelhard et al. 2009). Discussions of taxing unhealthy foods and drinks often focus on tax rates that average about 10 to 20 percent of a product's cost. Taxes at that level would likely inspire consumers to cut back on taxed products and switch to other, hopefully healthier, ones. The potential for such shifts does not tell us, however, whether taxes at this level are optimal. Without further context, it is not possible to know whether such taxes, and the behavior changes they inspire, are too large, too small, or just right. Pomeranz et al. 2018 shows that from legal and administrative perspectives, a federal junk food tax appears feasible based on product categories or combination category-plus-nutrient approaches, using a manufacturer excise tax, with additional support for sugar and graduated tax strategies. However tax base and definition of the object is also crucial. For instance, a tax based on energy density rather than components such as fat might best address the obesity epidemic. Preliminary estimates show that such a tax, if focused on foods that are nutritionally poor as well as energy dense, might be quite large compared to existing prices for many such foods. The paper also considers the possibility of basing the tax partially or wholly on certain biomarkers (weight, blood chemistry, etc.) and briefly considers litigation as an alternative to taxation.

4 Latvian experience in taxation

Latvian experience related to excise taxation of "unhealthy" goods is related to excise tax on coffee and sugar sweetened beverages. The taxable object of excise tax on non-alcoholic beverages is water and mineral water with added sugar, other sweetener or flavouring, and other non-alcoholic beverages, as well as other beverages not conforming to the definition of

alcoholic beverages referred to in this Law (Law On Excise Duties), except fruit and vegetable juice and nectar, beverages which contain not less than 10 per cent of juice (except fruit juices made of concentrate), not more than 10 per cent of added sugar and which do not contain food additives and flavourings, natural water and mineral water, water enriched with minerals and vitamins, and without added sugar, other sweetener or flavouring. The taxable object of excise tax on coffee is ground or not ground, roasted or not roasted, with caffeine or decaffeinated, which is classified within the Combined Nomenclature under the code 0901, as well as coffee extracts, essences and concentrates and products based on such extracts, essences or concentrates or on coffee, which is classified within the Combined Nomenclature under the codes 210 111 or 210 112. The rates of tax are shown in Table 2. Rates on coffee remains unchanged, and rates on non-alcoholic sweetened beverages are harmonised with excise tax rates on beer.

Table 2. Excise tax rates for non-alcoholic beverages and coffee, EUR

Product	01.01.2016.	01.01.2017.	01.01.2018.
Non-alcoholic drinks, per 100 litres	7,40	7.40	7.40
Coffee, per 100 kg	142,29	142.29	142.29

Source: Authors constructed based on law "On excise tax".

From fiscal perspective generated revenues are not so significant and all other excises (other than EU traditional tobacco, alcohol and energy products) in 2017 constituted only 15,3 millions Euro and it is projected for 2018 that revenues will be 16 millions Euros (0,18% of the total state budget expenditures).

Over recent years the Ministry of Health several times has made various proposals to place excise tax on several grocery products that the Ministry of Health consider "unhealthy". The tax proposal expected to allow capitalizing on the consumption of these products as well as limiting the consumption itself. Similar to above mentioned scientific literature some authors argued in public discussion in medias that this excise duty have purely fiscal nature and can cause several complications such as financial pressure on not-well-off households. According to the calculations of Ministry of health and calculations of authors (see Table 3) possible excise tax on unhealthy products could generate 22,3 millions Euros (0,25% of the total state budget expenditures). The estimation is based on other countries approaches to tax final processed products (except for palm oil, where estimation is based on imported amounts) which are potentially unhealthy and to change the consumer's attitude.
Taxation proposal could be justified also by other countries experience. Thus, Bíró (2015) estimated that consumed quantities of processed food to decrease by 3.4% due to the unhealthy food tax, while the consumed quantities of unprocessed food increased by 1.1%.

Table 3. Preliminary annual revenue estimates, the introduction of excise duty on certain food groups

Preliminary annual revenue estimates, the introduction of excise duty on certain food groups					
Food products	**A**	**B**	**C**	**D**	**E**
	Average consumption of food per household member in 2016	**Tax rate (euro) per 100 kg**	**Annual consumption of total population (1931200 inhabitants) (kg)**	**Tax revenues estimation 2017 assumption (euro)**	**Revenues per capita (euro)**
Sausage,cooked and smoked meats (kg)	20.71	21.00	39995152.00	8398981.92	4.35
Fresh lard, other animal fat (kg)	0.35	41.00	675920.00	277127.20	0.14
Chocolate sweets (kg)	1.97	41.00	3804464.00	1559830.24	0.81
Chocolate (kg)	0.69	41.00	1332528.00	546336.48	0.28
Caramels, toffees (kg)	1.32	41.00	2549184.00	1045165.44	0.54
Confectionery (kg)	4.88	41.00	9424256.00	3863944.96	2.00
Biscuits, crackers, rusks (kg)	6.40	41.00	12359680.00	5067468.80	2.62
Prepared soups and broths, preparations for making them (kg)	0.67	41.00	1291768.00	529624.88	0.27
Chips (kg)	0.58	41.00	1120096.00	459239.36	0.24
Palm oil (kg)	0.75	41.00	1456916.00	597335.56	0.31

Source: Authors constructed based on Central Statistical Bureau of Latvia 2018.

Placing the excise duty on products would consequently increase the price of the product, and it can be agreed with Bergman & Hansen 2016 that the response to tax changes is asymmetric, and the tax incidence is dependent on the relative size of the tax. Since the excise duty is a consumption tax, it will directly affect lower income citizens, as they spend the majority of their income on grocery products. According to authors the financial regressivity of taxes on unhealthy foods and drinks can be softened or amplified depending on how the revenue is used. Using the revenue to increase tax credits for families, expand transfer programs, or support programs in lower-income communities, for example, could offset or even reverse the initial regressivity of the tax. Effects on individual families would vary, however, depending on how much they continue to buy taxed products and how much of the tax reductions or spending increases benefit them. Using the revenue to reduce income taxes, by contrast, would primarily benefit higher-income households and thus increase the regressivity of the overall policy. Distributional effects also depend on any health improvements resulting from a tax. Many of those gains would go to any individuals whose health improves because of the tax. If people with lower incomes are systematically large beneficiaries from the health improvements, the tax might thus generate a regressive financial burden but progressive health benefits. If health gains result in lower health care spending, however, some gains will also accrue more broadly to the workers who pay for private health insurance and the taxpayers who pay for public health programs.

5 Conclusion

Introduction of excise tax could be pilot project for Latvian health policy with main goal to change the diet and reduce risks of ICD. However in general remaining problems are cross border trade issues and research on substitution effects: that is, what products will consumers substitute in place of taxed items? Consumers may elect to substitute healthier items, but they may also elect to purchase products that have similarly harmful health consequences as the items being taxed. Consumers appear to find it easier to switch away from sugary drinks, which have many alternatives, than from other foods and drinks. In principle, taxes can encourage businesses to develop and market healthier products; in practice, most existing and proposed taxes fail to do so. Taxing sugary drinks based on their volume, for example, does nothing to encourage businesses to reduce the sugar content of their products (unless they can eliminate it). Taxing sugar content would be more effective. It would encourage businesses to reduce the sugar in existing drinks and to introduce new, lower-sugar alternatives, and it would encourage consumers to switch to less-sugary drinks. Policymakers should give careful thought to how they use revenues from taxing unhealthy foods and drinks. That revenue could be used to fund subsidies to fruits

and vegetables, healthy eating information campaigns, obesity prevention, and similar efforts. Several aspects of nutrition-focused taxes remain under-studied. These include how taxes change overall diets including food in restaurants, schools, and other locations outside the home, how businesses change their product offerings in response to different tax designs, and how policymakers should determine the magnitude of potential taxes.

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Primary Paper Section: A

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