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Did the junk food tax make the Hungarians eat healthier?

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ABSTRACT

I analyse whether the introduction of the unhealthy food tax lead to significant improvements in the dietary habits of the Hungarian population. I focus on the consumption of processed and unprocessed food before and after the tax was levied on a range of food high in salt and sugar. Using data from a large scale household panel data set, I estimate the 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%. The lowest income groups were the most responsive to the introduction of the tax. Despite data limitations, the results indicate moderate improvement in population diet that is likely to be attributable to the tax.

Introduction

The junk food tax of Hungary which was introduced in 2011 is a unique approach to improve population health. The policy is unique in terms of the range of food covered by the tax, the rate of the tax, and the explicit aim of health improvement.

My aim in this paper is to estimate the effect of the Hungarian junk food tax on food consumption. I am interested in the overall effects and the effects by socioeconomic status. I take a broad approach in the sense that I do not focus on the consumption of particular items on which the tax was levied, but analyse broad consumption categories. I focus on how the consumption of processed and unprocessed food changed after the introduction of the junk food tax. Dietary guidelines[1] generally recommend the consumption of more fresh food and less unprocessed food, so as to reduce the consumption of sodium, solid fats, added sugars. The consumption of unprocessed food is generally known to reduce the risk of cancer and heart diseases.[2] Focusing on broad categories of food can reveal if the junk food tax lead to substantial changes in dietary patterns. If the taxed items are substituted with untaxed, but also unhealthy products then the tax does not achieve its final aim.

The analysis contributes to the knowledge of how governments could tackle obesity and diet related diseases of the population. The results of the paper suggest that taxing specific categories of unhealthy food can lead to some improvements in the dietary habits of the population, especially among the lower income groups. This is based on statistically robust albeit quantitatively moderate evidence for decreasing consumption of processed food after the junk food tax in Hungary was introduced. In the long run these dietary improvements are likely to lead to positive health effects.

Related literature

There are only few studies that assess based on natural experiments the efficiency of taxing a selected range of unhealthy food. This scarcity of the literature is mainly due to the fact that only few countries have introduced unhealthy food taxes. The taxation of sugar sweetened soft drinks is more widespread, among others, Finland, France, Norway, and several states of the US have introduced such taxes. According to Sturm et al. (2010), the existing small tax rates on sugar-sweetened beverages are not enough to affect the consumption of the targeted soft drinks and to reduce obesity, at least not among the youth. Apart from the Hungarian junk food tax, the Danish fat tax serves as a natural experiment for assessing the effects of taxing unhealthy food. Denmark introduced a tax on saturated fat in October 2011, which was abolished in January 2013. Jensen and Smed (2013) conclude that the Danish fat tax had a 10–15% negative short-run effect on the consumption of saturated fats. In Hungary the tax was levied on a broad range of food and drinks containing salt, sugar or caffeine, thus the estimated effects are not directly comparable but can complement the findings from Denmark. The existing results on the effects of

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[1] See for example the guidelines of the U.S. Department of Agriculture and U.S. Department of Health and Human Services: USDA (2010).

[2] See for example the "Healthy Eating Plate" of the Harvard School of Public Health (2015).

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the Hungarian junk food tax are discussed in Section 'Existing evidence on the consumption effects'.

Another strand of the literature is based on modelling exercises. Mytton et al. (2012) provide a review of the existing evidence related to the effects of unhealthy food taxes. As they document, most of the results on the consumption and health effects of unhealthy food taxes are based on modelling exercises. This line of the literature suggests that unhealthy food taxes have relatively small effects due to the small price-elasticity of food consumption, and also to substitution effects. Taxing sugar sweetened drinks seems to be more efficient.

The overall efficiency of unhealthy food taxes is still controversial. For example, in the model of Yaniv et al. (2009), a fat tax may increase obesity if the introduction of the tax reduces the time otherwise spent on physical activities because more time is spent on cooking and shopping. On the other hand, Miao et al. (2013) claim based on the analysis of a demand system that added-sugar tax is an efficient instrument if substitution possibilities are properly taken into account. As they point out, although there is evidence in the literature that consumers can substitute taxed unhealthy food with other unhealthy but untaxed food, they also can substitute low fat or low sugar items for high fat or high sugar items. Powell et al. (2013) conclude based on a review of the U.S. literature that changes in the relative prices of unhealthy and healthy foods and beverages can lead to significant dietary improvements and weight losses, particularly among those who are most at risk of obesity.

Experimental studies also provide mixed evidence. According to Epstein et al. (2012), there is consensus in the related experimental literature that tax or subsidy policies can achieve changes in the consumption of targeted food. However, due to substitution effects, the health effects of such policies are controversial.

I can address these controversies by the empirical analysis of the consumption effects of a unique tax policy, and by analysing the expenditures not only on those items that were affected by the junk food tax, but also those that could serve as substitutes. A novelty of this paper is to estimate the consumption effects of the Hungarian junk food tax based on large scale household level data. Due to data limitations, I analyse the effect of the Hungarian junk food tax only on the consumption of salty and sugary food but not of drinks high in sugar or caffeine. Also, the relatively short time coverage of the data and the confounding influence of other factors do not make it possible to reliably estimate the health (and obesity) effects of the tax policy.

The unhealthy food tax in Hungary

Policy

After its legislation in July 2011, the junk food tax was introduced in September 2011. The tax is often called "chips tax" in the Hungarian media, the official naming is "Public Health Product Tax". The tax applies to certain categories of pre-packed food which are high in salt, sugar or caffeine. The official aim of the Hungarian Government was to improve the health of the population, and the income from the tax would be used for health improving policies (including wage increases of health workers). With the help of the tax the Government wished not only to reduce the consumption of products high in salt, sugar and caffeine, but also to improve the health behaviours of the population, and shift the food supply towards healthier products. Since 2012 the income from the tax flows to the public health insurance fund, making up around 1% of the fund's income.

The health status of the Hungarian population makes health improving policies reasonable. According to OECD statistics (OECD, 2013), ischemic heart disease, cerebrovascular disease and cancer mortality rates are one of the highest in Hungary among the OECD countries. Life expectancy in Hungary is about 5 years shorter than the OECD average. Adult obesity rates are close to the OECD average.

The junk food tax was followed by two other major regulations of the food industry in Hungary. First, from 18 February 2014, it is prohibited to release such a food product which contains more than 2% of trans fat within its total fat content. Second, a set of regulations came into effect in January 2015 which ensure that the food and drink offered at public canteens satisfy some health requirements. For example, sugared soft drinks and high fat meat are prohibited, and salt and sugar are forbidden to be displayed on the tables. Since these two regulations came into effect after the time coverage of the data I use in the empirical analysis, these do not interfere in my empirical results. Also, a regulation came into effect in 2012 which aims at general health improvements in schools, requiring among others the provision of healthy food in schools – without providing any further guidance.

Fig. 1 shows the time series of daily consumption of nutrients in Hungary since 2001. Since around 2006 the intake of proteins, fat, carbohydrates and energy has been decreasing. Still, these intakes are higher than the guidelines of daily nutrient intakes, therefore there is a scope for improving the dietary habits of the population.[3]

Table 1 presents the rates of the junk food tax (1 EUR is approximately 300 HUF). The first column lists all the taxable products. The basis of the tax is the quantity of the product, not the price. Exemption applies if the merchant sells less than 50 litres or 50 kilograms per year of the otherwise taxable product.[4] Whether a product is taxable or not depends only on its ingredients, thus the tax does not discriminate for example among producers. Official statistics on the average prices of the taxed item categories are not available, therefore it is not possible to exactly measure the proportional magnitude of the tax. Nevertheless, to get an idea of the magnitude of the tax relative to the actual prices, in the final column of Table 1 I indicate the gross price of a taxable product within each product category. Although these items can be considered as widely known among the costumers, these are just ad hoc examples and do not represent the price levels for the whole product groups.

The nominal tax revenue was similar in 2012, 2013 and 2014, with an annual revenue of around 19–20 b HUF (OEP, 2014a,b). Fig. 2 shows the distribution of the tax revenue according to the taxable products. Pre-packed sweets have the largest share in the tax revenues, followed by salty snacks and salty seasonings. According to ECORYS (2014), the price increases in confectionery, salty snacks and sugar-sweetened beverages were comparable to the levied tax rates, whereas little price changes were seen for energy drinks, mainly due to the producers changing the ingredients.[5]

In the rest of the paper I focus only on food consumption, and not on drinks. This restriction is mainly due to data reasons, as I further explain in Section 'Data'.

[3] For example, for a 30 year-old low active woman with BMI of 25 and height of 1.6 m the Institute of Medicine of the National Academies (2002) published the following reference intake values: energy 8042 kJ, carbohydrate 130 g, protein 46 g, and fat intake should be as low as possible.

[4] Further information on the exact categories of the taxable products is provided by the National Tax and Customs Administration of Hungary (http://www.nav.gov.hu/nav/ado/nepegeszsegugyi_termekado).

[5] ECORYS (2014) is a study conducted by an international research and consultancy company for the European Commission with the aim of assessing the impact of food taxes. Some further details are provided in Section 'Existing evidence on the consumption effects'. ECORYS (2014) reports the following expected price changes (=tax rate × tax base as % of the pre-tax price) for years 2011 and 2012 combined: confectionery 5.4%, juice 2.7%, energy drinks 37.5%, salty snacks 18.1%.