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23 February 2012

Online at <https://mpra.ub.uni-muenchen.de/40596/>
MPRA Paper No. 40596, posted 11 Aug 2012 18:33 UTC

**Carbon incentive for physical activity:
Conceptualising clean development mechanism for food energy**

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ABSTRACT

The paper analyses the food and water consumption, excessive consumption, consumption taxes like fat tax and brings out the business behaviour of tickling food consumption. In addition to taxing and regulating the excessive consumption & the tickling behaviour, it explores the preventive best practices that reinforce natural human ability of self-control over food consumption. It identifies the practices where there is purposeful or consequential reduction on food consumption i.e. weight loss treatment and yoga, proposes clean practice and suggests accounting for savings & carbon incentive. With the efforts to increase physical activity by subsidy proving to be less effective and with the taxes preventing consumption but not reducing temptation in short run the paper considers embedding the best practice in the education to bring the habit of physical activity. Recognising yoga and evaluating the practice for optimizing food consumption may operationalize wellbeing practice, stimulate economic growth, and may lead to completeness in conserving all forms of energy and to completeness in charging of consumption taxes.

Back ground

At micro economic level, there are two things that consume energy on the road – first are automobiles and the second are human beings. We have identified some of clean technologies for automobiles and for factories in manufacturing sector, and this is an effort to bring out services sector activities that reduce/optimize food consumption i.e., clean technology for food energy.

At Macro-economic level, projections forecast that the world population may increase to 9 billion by 2050 and that there will be massive additional deforestation. Adding to the above, there will be 3 billion new middle class who will demand more resources including food. This paper analyses possible reduction in food consumption by at least *one meal/person/day* (assuming 3 meals a day). Decoupling of growth practices is necessary to prevent the less useful activities like the overeating and weight loss in the society.

Taxes & consumption

FOOD CONSUMPTION = CONSUMPTION DUE TO HUNGER & THIRST

+ CONSUMPTION DUE TO DESIRE FOR CONSUMPTION

Normal consumption means the quantity of food consumption for not being hungry. This depends on the various factors including physical activity, growth and climatic conditions. According to FAO Human energy requirements is the amount of food energy needed to balance energy expenditure in order to maintain body size, body composition and a level of necessary and desirable physical activity consistent with long-term good health. This includes the energy needed for the optimal growth and development of children, for the deposition of tissues during pregnancy, and for the secretion of milk during lactation consistent with the good health of mother and child¹.

Each food item, by nature, has a unique taste appeal which is why they are liked, produced and consumed. However, some of the food items may have strong appeal to the senses that they

are consumed in quantities that are above the normal requirements of the body. In those cases, excess consumption could be classified as consumption out of desire.

Consumption arising out of desire can further be segregated as below

CONSUMPTION DUE TO DESIRE FOR CONSUMPTION= PRODUCTS WITH VERY STRONG APPEAL TO SENSES AND WITH NO FOOD VALUE

+

MODERATE STIMULANTS THAT ARE FOOD OR PART OF FOOD

FOOD VALUE MEANS THAT THE PRODUCT IS CAPABLE OF SATISFYING HUNGER, THIRST OR BOTH.

Products with strong appeal to senses and with no food value

Some products have stimulants or taste with strong appeal to the senses that, in many cases, the brain is unable to control their habituation and acceptance. Products that fall under this category, for example tobacco, alcohol, drugs, etc., are never consumed for hunger/thirst. The activating event for the consumption of such products is purely desire or consuming experience that can be classified as addiction. Pure stimulants or tastes are very few in number, and consumers are prepared to pay expensive price for the product despite harmful effects. The effect of stimulants or taste cannot be offset by physical exercise. In the absence of high end medicine, the best way to prevent the harm is not to consume such products.

There are few exceptions to the above general rule.

- There is a view that alcohol is not a stimulant and that it also has calorie value that can be counted towards daily consumption limits. However alcohol is not consumed to quench thirst and are not considered as a part of food system ¹.
- There are cases where certain stimulants like Coffee latte meets hunger reasons as well.

As the above products have no food value and can cause harmful effects, governments around the world discourage their purchase by taxing them. The tax, as an implicit health insurance premium², would fund the health care costs as recovery through medical treatment/rehabilitation is the only option.

Products with moderate stimulants or taste appeal

These are food products that are tastier because of nature or ingredients like cheese, butter, sugar, salt etc. In market economy, there are cases where individuals/entities research and accumulate information about the products that tickle temptation for consumption in larger quantities, and build food products that are tastier. For example high salt content in the products like salted peanuts/biscuits/ready to eat foods in restaurants & fast food chains or sugar in products like bag of candies, caramelised peanuts, pudding, soft drinks etc. In addition to natural products, there are engineered products like Ajinomoto (Mono Sodium glutamate) sold in the market mainly to boost consumption.

The line between actual need and excessive consumption is subtle and it differs from one person to another. In general, a consumer arriving at the self in a shop may choose soft drinks

for water if the prices of the products are same or almost the same as he would be tempted by the sugary taste apart from quenching the thirst. Similarly, a person while hungry may choose big portions of tastier food options. Even though the *activating event* is normal hunger/thirst, people may end up consuming more food or unhealthy food if the decisions made are out of the desire for consumption, unless they are within his daily nutritional requirement.

In addition to above, food products are also consumed for purely desire for consumption say, snacking while watching television or a movie that may also result in excessive consumption. Irrespective of the activating event, any excess energy consumed, if not burned by physical activity, may be stored in the body as fat. The habit if continues for a long time results in person becoming over weight. Unlike the case of strong stimulants, the health problem is function of both physical activity and consumption where consuming food is indispensable irrespective of health condition.

Responses to reduce overeating

Similar to the tobacco tax model governments have introduced tax on food. The main difficulty is to cover all the food items and to classify whether a consumption is normal consumption or otherwise. As a result governments have started by taxing the nutrients that cause fat accumulation.

1. Taxation

1. Beverage tax/ soda tax has been introduced in the USA³.
2. Fat tax, first introduced in Denmark, covers excessive saturated fat in meat, dairy products, animal fat, edible oil, margarine, spreadable and in other foods⁴.

The fat tax collections were used to subsidize physical activity and exercise equipment. The economic instruments were successful on the consumption front than on the expenditure front (i.e.) the effort was successful in curbing fat consumption while being less successful in improving on the physical activity. The research also concluded that physical activity program should be targeted against specific set of population like children, immigrants, single mother and others, and the economic instruments should be verified for the actual effects of reducing obesity or average weight³.

2. Loyalty-Points 4 life scheme by Manchester NHS

The UK Government has planned to launch Points4 life scheme under which physical activities will be rewarded with points that can be exchanged in stores for food. The project is still in review stage and the pilot may be launched soon where the rewards are passed on after verification of the physical activity. The project is delayed because the big retailers are yet agree on the terms of operation of this project.

3. Other incentive schemes include Fruit & vegetable subsidy, child fitness tax credit, public transit tax credit, Sporting equipment tax credit, subsidised physical activity program, Income transfer healthy food, Income transfer physical activity³. All the programs discourage fat & sugar consumption, and encourage physical activity and consumption of fruits & vegetables.
4. There are rules of thumb given by NHS to curb excessive consumption, for example, to avoid any ready to eat food product with added sugar or added salt. If followed strictly, in superstores like TESCO, the consumers would end-up with very few choices of Matzo and unsalted nuts.

The Problem

- (1) The price increase stops/diverts people from buying high fat food or sugary drink in the short run. The increase acts as control mechanism where consumers are required to pay not only for the product but also for the health care cost arising out of consumption of that product, where people still have to understand temptation and to gain self-control over food consumption. All the economic instruments above are the points and lines within the bandwidth of consumption of goods for hunger and desire with government/health authority trying to reduce the sedentary lifestyle and to increase physical activity to burn the excess calories consumed
- (2) In developed countries there is huge infrastructure to capture all the data regarding products sold for the purpose of charging fat taxes. After fat tax the Danish government is contemplating Chocolate and sugar tax. In America there is discussion on soda tax. There are products that have direct impact of accumulation of fats like saturated fat & sugars. These are taxed under fat tax & sugar tax legislation respectively. In addition to the above, there are product additives like salt, sugar that are added in excess quantities than normal to stimulate consumption. There are no taxes on such business behaviour.

Understanding temptation

In deviation from the existing model of taxing stimulants, (smoke and alcohol), the focus of economic instruments can be to control/moderate the activating event i.e. hunger, thirst and desire for food. If a person becomes overweight, he can approach weight management centre to reduce weight. Charities for Health & obesity, government and various other institutions in health help the affected. There are remedies and they generally seem to be a task for the affected. The weight loss treatment prescriptions are helpful in regularising the abnormal consumption to maintain healthy weight, which changes from time to time. In the long run, the person has to regain self- control over consumption.

The Best Practice - Self-regulation of consumption

Traditional practices like Yoga (A practice that involves disciplining the mind and body through exercises and meditation) are helpful in reinforcing the basic human capabilities including self-control over food consumption. Yoga sutras, text for yoga practice; reads that "**by self-control on the pit of the throat one subdues hunger and thirst 3.30**" (Part 3 line 30). Yoga practitioners are taught that this is only a sign of good practice and not an end. Some of the sample studies are given below

1. Yoga prevents fat accumulation in the body

At physical level it was observed that some of the yoga postures help in preventing fat accumulation in specific areas of the body. The paper -Yoga: a therapeutic approach by Nirmala N. Nayak, MD, and Kamala Shankar, MD- brings out this fact⁵.

2. Yoga reduces Basal metabolic rate.

Basal metabolism is one of the important components of human energy consumption. As per FAO, Basal metabolism comprises a series of functions that are essential for life, such as cell function and replacement; the synthesis, secretion and metabolism of enzymes and hormones to transport proteins and other substances and molecules; the maintenance of body temperature; uninterrupted work of cardiac and respiratory muscles; and brain function. The amount of energy used for basal metabolism in a period of time is called the basal metabolic rate (BMR). Depending on age and lifestyle, BMR represents 45 to 70 per cent of daily total energy expenditure, and it is determined mainly by the individual's age, gender, body size and body composition ¹. — Further studies have demonstrated that the long term practice of yoga and meditation leads to a decline in the BMR⁶.

3. Yoga improves consciousness and reduces trance like state in binge eating

People with binge eating disorder consume large amounts of food and feel lacking control over food consumption. As a result there is large fat accumulation and obesity problem. According to Heatherton and Baumeister⁷, binge eating induces trance like state that enables an individual to escape the negative effect. With trance like state in the patients absorbing patients into the habit of excessive consumption, traditional practices like Yoga which develops consciousness and which consequentially normalises consumption could be the best option available for the overeating problem. Shane Mclver, Michael McGartland and Paul O'Halloran⁸ have used both psychological and physiological factors to demonstrate that Yoga practice could be a cure for binge eating with the practice promoting conscious consumption.

Thus, Yoga can be a reasonable answer for the problem of overeating as it cultivates the habit of reasonable consumption in individuals. Considering yoga practice would add completeness to the conceptual framework for food consumption and physical activity as it controls/moderates the main activating event, hunger and thirst.

Business behaviour

The above analysis can also be a core idea for bringing out the regulation for tickling human behaviour on food consumption. The basic purpose of the food industry is to serve food to satisfy the basic need and to deliver real utility to the customer for financial rewards. In this process, at any point of time, if the business tickles consumer behaviour of food and water consumption, then such behaviour is to be regulated with appropriate taxes and non-monetary measures. Tickle tax could be levied on all business or other third party induced consumption

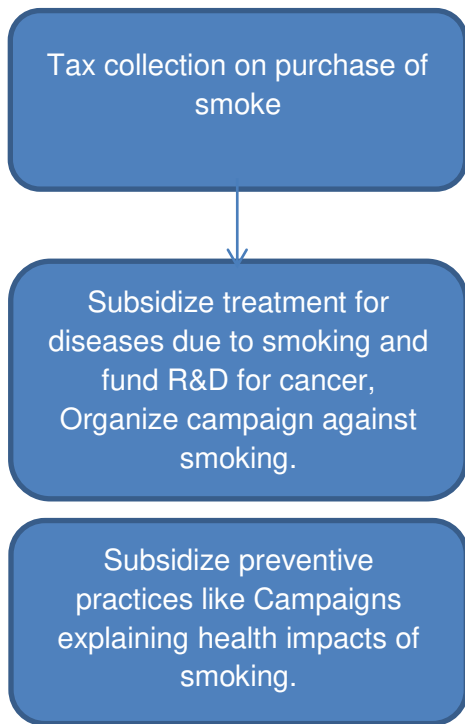
Consumption taxes = Tax on products that leave unhealthy imprint (Fat tax)

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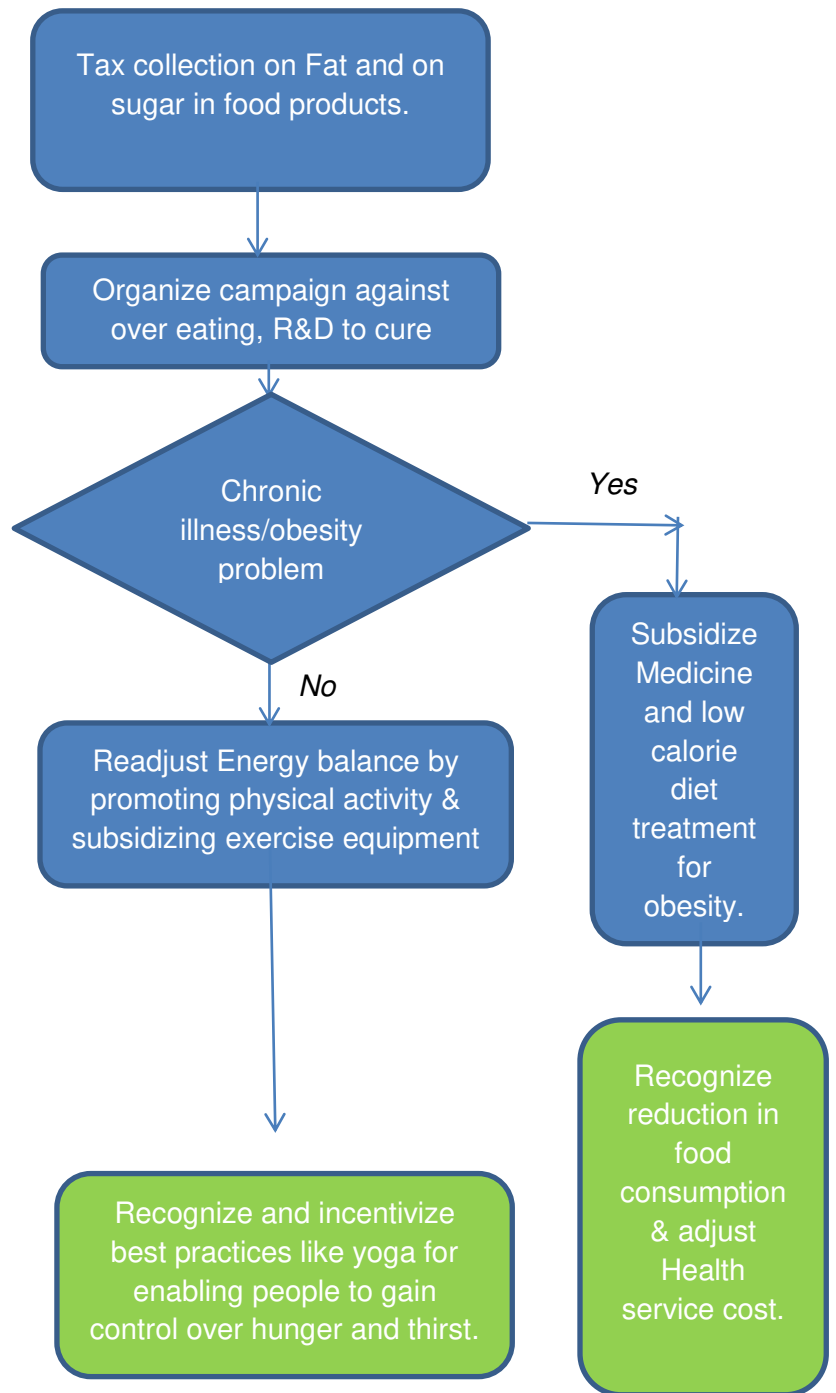
*Tax on business behaviour that tickles excessive consumption
and that leaves unhealthy imprint (Tickle tax- Proposed)*

- (1) The fat taxes and sugar tax are levied to stop consumption of products that have high saturated fat and high sugar respectively. These products are taxed as these causes fat accumulation in the body.
- (2) Tickle tax would cover the behaviour that causes excessive consumption. The business behaviour in question can be identified by observation or by the reports of cause and effect. The behaviour here has wide connotation it includes goods, services, pricing, loyalty points program, indulgence facility and all other things except for serving food and water. For example the high salt content in cheese may be construed as manifestation of behaviour of tickling excessive consumption while the cheese may be taxed (fat tax) for the fat content. As a result, the product may be liable under fat tax and tickle tax.

Tax on addictive products-Cigarettes



Tax on Food



Points discussed for health economic valuation of services.

The basic difficulty is heterogeneous nature of food items and determining the nature of inclusion of the food item in the final product. General food laws are responsible for the safe food and they ban a food item only if it is injurious to health. Excessive consumption only leads to the state of obesity, a reason for cardio vascular diseases, if there no corresponding burning of fat by physical activity. So, the products that pass the test of not causing injury under general food tax laws could be covered under the new law for increasing consumption by enhancing consumption experience. Tickling would include the making food options tastier or seem tastier, which includes the presence of a product say added sugar or salt, convenience or other factors identified from time to time. So, excessive salt in peanuts, Monosodium Glutamate in food, sugar coated nuts, Co₂, other modified or engineered products that cause sensual imprints or otherwise tickle food & water consumption may be liable for improving the sales and increasing consumption. The tickle tax proceeds can be used to fund cure for eating disorder, yoga, physical exercise and obesity cure. Consumption tax is an attempt to identify the reason behind the problem of excessive consumption and to bring completeness to the framework of taxing the food for obesity.

To recapitulate, there is a two way approach to sort out the excessive consumption. Improve self-control over consumption by empowering people, and second is to regulate tickling behaviour of business or other third party.

Accounting for Carbon incentive

(Activities where there is reduction in food consumption)

1. Weight loss treatments – Data from National Health Service UK

A Weight management centre reduces body weight and also helps an individual to manage food consumption. The centre might be eligible for carbon credits for reducing food consumption. For example, some of the weight loss treatments achieve results by prescribing reduced calorie intake for prevention of fat accumulation. From the day of the treatment the calorie consumption is around 600 k calories per day to 1600 k calories. During the Treatment period, there is carbon savings between 1900 K Cal to 900 K Cal per person per day (assuming 2500 k cal as minimum prescribed for males in the UK). *Health economic cost* of treatments within the present infrastructure requires an additional cost of advising the patients of diet and exercise plan. (Additional cost is around AUS\$9.76 to A\$7.30 for a kilogram of weight loss)⁹. A carbon incentive for the savings achieved may reduce health economic cost of treatments and provide a basis to recognise carbon savings for food Energy. For this the evidence of reduction is available with National obesity observatory.

2. Yoga centres

Intense practitioners of Yoga are called Yogis and one of the characteristics of yogis is that they consume food only once a day. A Person who consumes food twice a day is generally referred to as bhogi. A structured yoga practice may reduce food consumption from three to twice a day. Assuming that normal consumption is three meals per day i.e. breakfast, lunch and dinner, in sum, the reduction in food consumption would be one meal a day in case of moderate practice and two meals a day in case of intense practice. A carbon incentive could fund the above practice in developing countries, and save tonnes of food & water to relieve the stress on agricultural production.

Embedding best practices in the educational curriculum of Global education centres

- a. Millions of students study in global education centres in countries like America, United Kingdom, France, Australia and other developed countries. The Education model in these centres still inculcate that education is to earn economic prosperity that can be used to buy well-being in terms of food, convenience and luxuries, and they prepare students according to the requirement of employers. The education system here again has to change to create the understanding that both economic prosperity and well-being are actually earned through deliberate efforts. For example, In UK there is an allowance that students can work up to 20 hours/week to support education. Rule change can bring purposeful physical activity for at least 7-10.5 hours/week to embed the habit of earning well-being while learning for work. This will also bring serious students to the education centres.
- The practice if implemented at overseas education centres can have very high impact. India is a country of one billion with 70% of the population living in villages and there are not many yoga teachers in India to teach them all. USA and UK has considerable amount of yoga practitioners who could join the program of improving Yoga practice in developing countries. At the moment there are nearly 103,000 Indians (2010-11) are studying in USA while the number is 19,205 for the United Kingdom. These students are top talent from the families including politicians, businessmen, technocrats, village landlords and others with considerable influence of at least effecting programs in a village or town. Reaching out to these people will mean reaching out to 103000+19,205 villages of India and creation of wellbeing ambassadors.
- b. In case of North America, there are efforts to integrate sustainability practices in the education curriculum by www.AASHE.org of North America. Their efforts have resulted in Presidents' of college and universities of America now having action plans for (<http://www.presidentsclimatecommitment.org>) the sustainable practices within college campus. Current action plans focus on reducing consumption of mechanical energy or fossil fuels. Having a plan for Incentive and practice of the physical activity would bring completeness.
- c. Embedding best practices in the educational curriculum- Developing countries
A carbon incentive could fund the infrastructure needs for the practice, which could also improve the ethics, life skills and the quality of the education, a problem that forums like World Economic Forum deliberate in this weak global economic situation. Applying this to other sections of population may increase truthful behaviour, wellness and food security.

Conclusion

Recognition of yoga as a mechanism to build the self-control over food consumption would be a beginning for change in accounting for energy, development of clean practices, education and corresponding governance frameworks. The tax structures and carbon incentive will continue to be in place until we identify all the reasons for existence of weight management centres.

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