

Ecological Footprint Tax for the Development of Local Agribusiness

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The concept of ecological footprint tax (EFT) can be developed to cover the whole economy, but as a first experimental step, this paper suggests to introduce it in agriculture and food industry. The EFT is expected to mitigate two of the greatest anxieties of people in developed and semi-developed world: (rural) unemployment and climate change. The proposed arctan relation between the ecological footprint of products and the tax to be paid would result in a fairer allocation of tax charges (rich big-consumers having to pay much higher tax than low-polluter average people), assure sustainability for both the ecosystem and local economy (the tax charge itself depending first of all on the distance a product is to be shipped to the customer), and allow a healthier diet (local production, reaching the customers within much shorter time period than imports, not having to be stuffed with preservatives).

Keywords: eco-tax, local economy, agriculture, food industry, employment

Introduction

In this paper, the author tries to draw the outline of a new concept for product taxation whereby two of the main problems for millions of people in developed and semi-developed countries could; if not be solved, it can be at least mitigated: mass unemployment (especially in rural areas) and deterioration of the nature.

Mass unemployment is linked to ever-freer movement of goods and capital. So long as capital can flow freely, capital owners invest where they can obtain the best mix of quality and cost, i.e., in sites with optimal conditions (like China). As general trade facilitation since WW2 and the proliferation of bi- and multi-lateral, regional and global trade agreements have brought (especially industrial) tariffs down considerably, even ordinary low-price products can profitably be transported from great distance. The result is that although people as customers might gain a bit by acquiring goods cheaper from low-cost countries than from national manufacturers, however, as employees, they can easily (the less skilled they are, the more easily they can) lose their jobs, or at least their livelihood can become increasingly precarious. In addition, as more and more economic activities go abroad, more and more people fall out of the labor market which, in the end, reduces the internal market for the remaining activities. In order to counteract this tendency, governments support the development of international tourism, i.e., the “importation” of extra customers, which would compensate local industries for damages stemming from weak domestic demand.

With this, we arrive at the other main challenge of our times. The ever-increasing inflow of goods and

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humans (mass tourists) to “importing” countries from ever growing distance adds substantially to the already alarming rate of nature loss and global warming. As long as the transportation of goods and tourists is mostly carried out by ships, trucks, cars, buses, and planes, i.e., by burning fossil fuels, international trade and tourism will justly be blamed for contributing to climate change and deterioration of nature.

The ecological footprint tax (EFT), the concept of which is introduced in this paper, is intended to help decision-makers to address two of today’s main problems for millions of people: mass unemployment and the deterioration of nature, or, in other words, social and ecological crisis.

Basics

The proposal for alleviating the above problems is based on the concept of ecological footprint, developed by two UBC scholars more than 20 years ago (Wackernagel & Rees, 1995). The essence of the concept is that it is possible to estimate how much land, i.e., how many so-called global hectares (gha) of ecologically productive land (dry land and waterbody) is needed for a defined population at a given technological level to support both the production of goods and services they consume and the assimilation of all their wastes sustainably (Rees & Wackernagel, 1996). Sustainability could, of course, be achieved if the population does not take more resources from nature than nature can re-generate. In brief, ecological footprint should not outstrip biocapacity.

On further considering the matter and adopting a narrower version of the original concept, i.e., by substituting ever smaller entities for the population of a whole city or country and eventually restraining the concept to individual products, it is possible, in theory, to estimate how many global hectares are needed for these individual products to be brought throughout their entire lifecycle, from invention to degradation or recycling (see Figure 1).

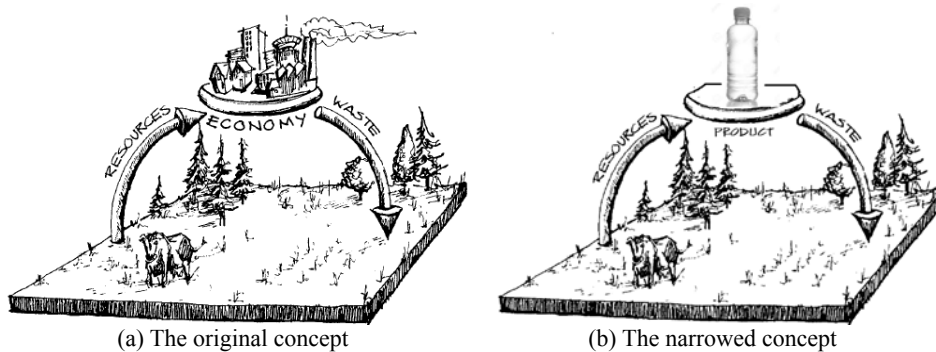


Figure 1. The narrowing of the concept of ecological footprint (Source: Own drawing based on Rees & Wackernagel, 1996, p. 228).

Based on the above, it becomes possible for the tax system to undergo a radical change whereby the amount of the tax paid on goods and services would be proportional to their need in nature, i.e., the ecological footprint their consumption involves. In other words, the greater the damage a given product causes in nature throughout its lifecycle, the bigger the tax burden on the customer should be. As time passes, this new type of tax could partially replace other taxes (e.g., VAT), although EU rules on minimum tax rates should be taken into account.

While logically the EFT could quickly become a general tax on goods and services, it seems worth, however, to test its efficacy in a particular sector of the economy. An important part of my proposal is to first

introduce the EFT system for the agricultural and food products.

Justification

Important Facts

Based on recent assessments, per capita ecological footprint exceeds global per capita biocapacity (1.7 gha) practically in all EU member states, with no data available for Malta and Luxembourg (World Wide Fund for Nature [WWF], 2014). Also, out of the components of ecological footprint (EF) carbon (i.e., the burning of fossil fuels) is, for virtually all these EU countries (with the notable exception of Denmark), the largest single one making up between 35 and 67 percent of their EF. Globally, the ratio of the carbon component has been on an upward trend throughout the period of 1961-2010, and rose from 36 to 53 percent of the EF. Moreover, it is rightfully assumed that much of this increase can be attributed to the fact that growth in international transportation of both goods and people has gone beyond any reasonable limits.

Another important fact is that damage inflicted by man to nature tends to correlate with household income (Kerkhof, Nonhebel, & Moll, 2009), and this is also true for food consumption. Although the difference in size of the EF between income deciles is higher for activities, like transport, travelling or entertainment than for the satisfaction of the first necessities, food consumption of the rich, too, fits the general trend in that it involves significantly higher greenhouse gases emissions than that of the poor. This is explained partly by the abundance, partly by the quality and composition of (i.e., high proportion of premium and/or imported products in) the food consumption patterns of the upper income deciles (Csutora, Tabi, & Vetőné Mózner, 2011).

Why Agri-food Products?

A recurrent complaint of last years' conferences on agriculture and food industries has been that Hungarian (and other new member states') customers put the cheapest, often foreign-origin products into their shopping carts even if they could afford the more expensive, high quality, domestic ones. As another common feature of those seminars, speakers tended to blame customers alone and propose enhanced marketing strategy and additional efforts of persuasion to solve the problem. But, for the overwhelming majority of households this "solution" simply does not work, as they have no choice; as a result of the enduring austerity policy—remember, crisis in Hungary started in 2006 and 10 years per capita real income recover to pre-crisis level (KSH, 2019)—people save on almost anything they can.

One step closer to the solution bring us studies investigating consumption structure through linking human health to ecological footprint, i.e., appealing to people's sense of health and eco-consciousness (Vetőné Mózner, 2014). Most of these studies conclude that even a minor change towards a healthier diet can significantly reduce a country's food footprint. One of the most interesting papers deals with the impact of different possible changes in British diet on UK food footprint (Frey & Barrett, 2007). It says that although any of the changes alone or in combination would reduce the impact considerably, the crucial difference resides in where the food comes from; by comparing the two extreme cases—the one when everything is imported to the other when all food are produced locally—we obtain a reduction of 0.7 gha in the footprint when local foods are preferred (see Figure 2).

From the British example, it would be easy to jump to a general conclusion that it is worth to buy domestic food not only for supporting local employment but also for limiting the damages caused by international trade in nature. But, it is still not enough good reason for the households to prefer local products.

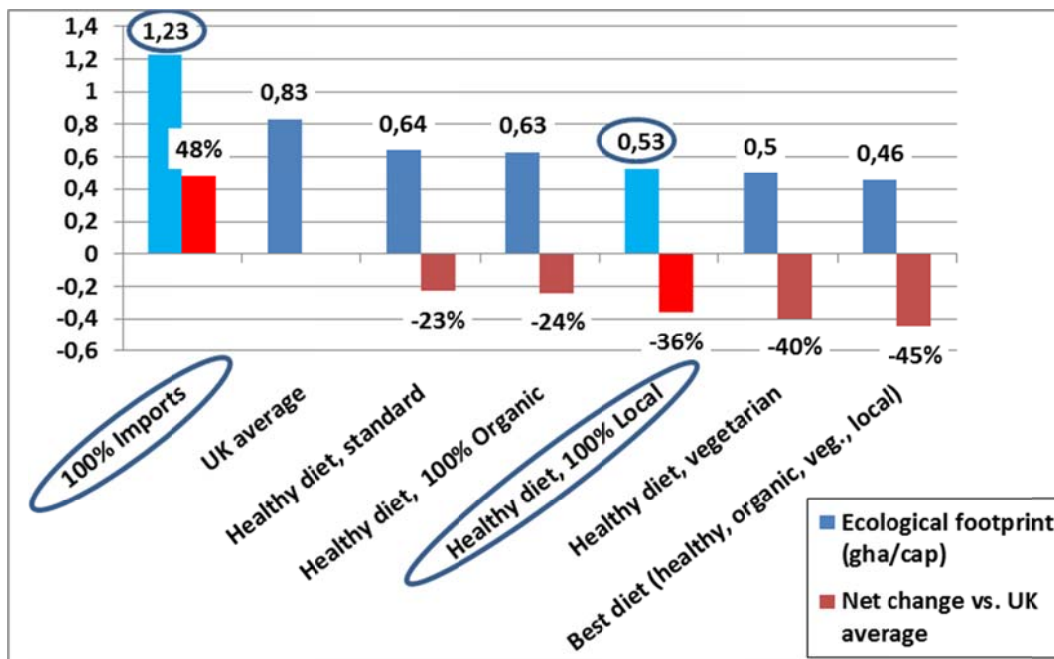


Figure 2. How a diet can reduce the food footprint in the UK? (Source: Own compilation based on Frey & Barrett, 2007).

It seems defensible to say that if an economic policy nurtures expectations concerning people’s behavior as customers, it is not enough to appeal neither to their emotions (Buy domestic!), nor to their reason (Buy healthy and local!). If you want results, you must hit people’s pockets. If the introduction of the ecological footprint tax (EFT) in agriculture and food industry brings prices for local food under those of imported one, it is certain that the majority of customers will shift towards national products.

Finally, let us mention one more reason why agri-food products seem to be an ideal field for testing the EFT. The point is that eating local foods, apart being good for the environment and supporting the local economy (farmers and other producers), has numerous potential benefits for the consumers, too. Flavor, savor, freshness, general quality, even nutrient content (with some reservations), all are better and higher in case of local foods, for they are picked at their peak of ripeness versus being harvested early in order to be shipped to and distributed on distant markets. In addition, with the distance and time between food production and consumption shortened, it is obvious that fewer additives—flavor enhancers, humectants, preservatives, etc. all posing potential threat to human health—are needed in a short chain. Although food additives in humans do very rarely lead to adverse reaction, the latter is often linked with very serious chronic condition. The symptoms certain additives may cause range from simple hives, to asthma or even life-threatening anaphylactic shock (Pálffy, 2015).

Methodology and Results

As the huge number of foodstuffs makes it impossible to develop a sound methodology measuring perfectly the damage a product can, during its entire lifecycle, cause to nature; also with regard to the afore-mentioned economic, social, and environmental goals and circumstances, we have to resort to considerable simplification. When determining the level of ecological footprint tax (EFT), we take into account:

First, the geographical distance between the place of production and the place of consumption (i.e., the place of shopping);

Second, whether the product is organic or conventional;

Third, whether the product is transported by airplane or not.

When justifying the choice of these three elements, it is important to understand that:

First, they meet the goals of supporting local production (farmers and food industry), preserving the nature, promoting healthy diet, and even bringing in an element of justice through the “punishment” of the rich by making them pay for the pollution they inflict to nature;

Second, they show strong correlation with ecological footprint, as from the nearer possible a product is transported, and the cleaner its production technology is, the smaller the harm done to nature will be;

And finally, it is relatively easy to identify them from the commercial documents accompanying the products. On the basis of these three elements, to determine the amount of the tax (EFT) does not require too much additional effort from traders and shopkeepers. With an appropriate formula, they will be able to easily and quickly determine the EFT from the accompanying documents.

As we have to deal with very different types of variables, we had better to apply different formulas on them. In the case of the geographical distance, it is worth to determine the radius of the area within which local producers should be prioritized. Figures 3 and 4 show two different modalities to determine the EFT. In Figure 3, the continuous red line shows EFT levels of the simpler version, dealing with only one preferential group of producers. When drawing the line, the main consideration was to make sure farmers and industries located within 200 kilometers around Budapest (i.e., roughly between the Hungarian capital and the national borders) would benefit from the system. Accordingly, the tax burden is relatively low until 150-200 kilometers; at 200 kilometers, there is an inflexion point from which on the curve steeply climbs up to prohibitive heights; then beyond 250 kilometers, EFT practically drives out competition or at least makes products extremely expensive in Hungary’s main consumption region.

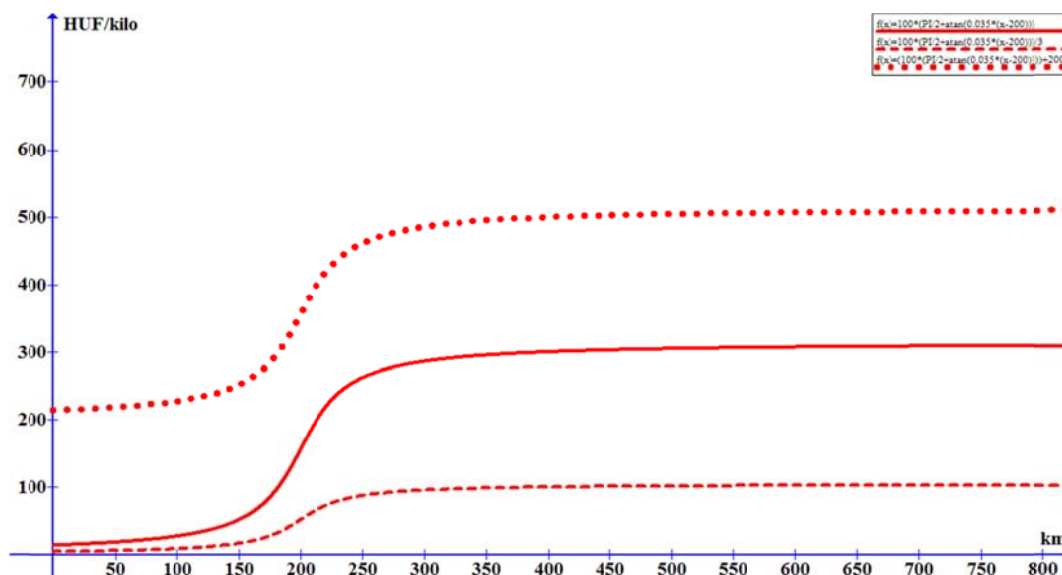


Figure 3. Ecological footprint tax (EFT) on certain agri-food products with one preferential group of producers, based on the geographical distance between the area of production and consumption.

Note. Dashed lines apply to organic products, dotted lines to air transported products.

A bit more complicated version of EFT is illustrated in Figure 4 by the continuous blue line. This curve has got three inflexion points, for our intention is now to support not only one but two groups of producers. The first beneficiary group (local producers) is located within a radius of 100 kilometers; for them the EFT is very low. At 100 kilometers, there is the first inflexion point from which on the curve ascends to slightly higher spheres, but without making trade impossible between the farthest regions of the country. Following a second (technical) inflexion point, the tax curve continues to climb slightly. Here is the second beneficiary group (national producers), located between 100 and 450 kilometers from the point of consumption; for them the EFT is a bit higher than for local producers, but not prohibitive. At 450 kilometers, there is a third inflexion point from which on the curve goes up to prohibitive heights.

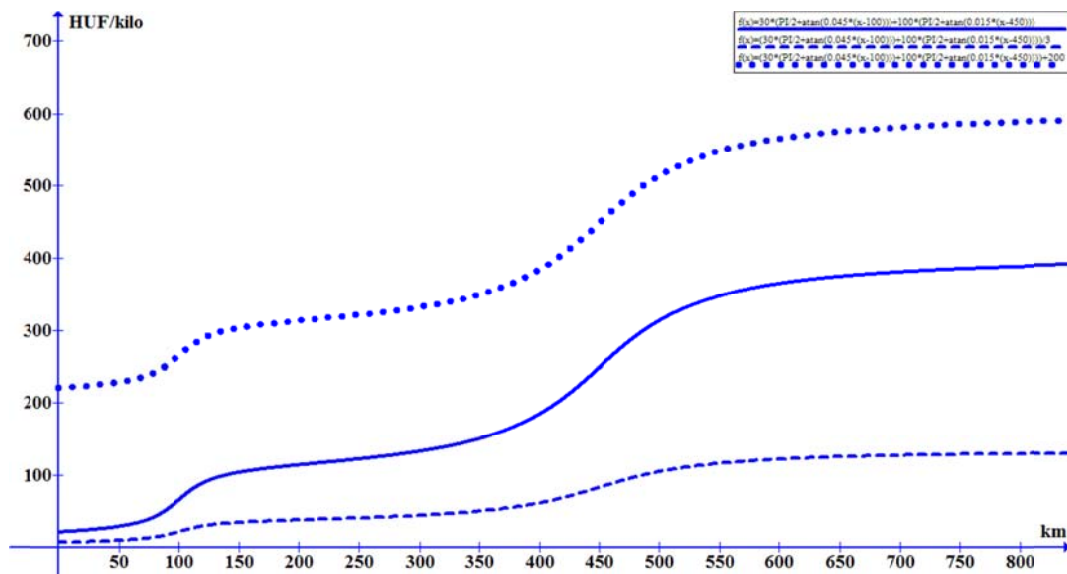


Figure 4. Ecological footprint tax (EFT) on certain agri-food products with two preferential groups of producers, based on the geographical distance between the area of production and consumption.

Note. Dashed lines apply to organic products, dotted lines to air transported products.

A much simpler formula is sufficient in the case of the second and third variable (i.e., the condition of being organic or not, and transported by airplane or not), since it is only about to provide a tax relief to those using environmental friendly technology, and penalize those doing the opposite. While conventional products would be taxed by EFT, for those organic the proposed formula is to divide EFT by a constant. In Figures 3 and 4, this constant is 3, and the corresponding values of this reduced tax are indicated by dashed lines. Hence, the EFT on organic products is, as a rule, one-third of that on conventional ones. By the same token, those products which are transported by airplane would be taxed with EFT plus a constant, let it be HUF 200 per kilo.

Conclusions

The proposed ecological footprint tax (EFT) is far from being a panacea. And, if we want to be precise even its name is misleading. Departing from the concept of ecological footprint, the author only tried to draft an incentive tool whereby locally produced foodstuffs (or those produced within a circle of a certain radius) become cheaper for local customers than those similar products (produced with the same technology) which are brought there for longer distances. In this way, we can kill several birds with only one stone.

First, preference given to the local production will boost local employment, thus help to retain people in rural areas. Second, the EFT, the size of which depends on the environmental friendliness of the production technology and the distance between production and consumption sites, will facilitate a gradual move from global to local economy, concerning both production and trade, which means less transport, less pollution, and therefore less harm to nature. Third, the new tax conforms to the principle of social justice in that by pushing up prices of imported foodstuffs, it increases tax burden of the better off, who has a great share in the consumption of imported goods and thus a much bigger than average ecological footprint. Fourth, it is not to be forgotten that, compared to imported agri-food products, local ones do not need to contain so much additives which means a blessing for human health, hence, on the long run, also less costs to the national health service.

Finally, the introduction of the new tax does not necessarily have to lead to increased tax charges for the majority of the households. On the contrary, it should be combined with the reduction of other taxes (e.g., value added tax [VAT]) which would enable local foodstuffs to be not only more competitive against imports, but also more affordable for customers.

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