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COMPTES RENDUS DE LECTURE

MARIO MAZZOCCHI, W. BRUCE TRAILL, JASON F. SHOGREN, **Fat economics: Nutrition, health, and economic policy**

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The prevalence of Food-Related Chronic Disease (FCRD), such as Type II diabetes, obesity, cancer and ischemic heart diseases is increasing dramatically in many developed and developing countries. As these health problems are associated to monetary costs, which take inter alia the form of productivity losses and health care expenditures, they are a legitimate concern for economists. Beyond the basic monetization of costs and benefits of medical interventions, the economic analysis can also shed light on the social and economic causes of FRCF, and inform public health experts on the effects of policies on consumers and producers behaviours. In this perspective, *Fat Economics* proposes a good introduction to the neo-classical approach to the FRCF, their economic causes, and eventually the cost and the effectiveness of nutrition policy instruments.

The three authors are agricultural economists. They are established both in Europe and the US and Chapter 1 takes much care in illustrating trends in FRCF by data from countries with rather different food cultures. In this chapter, the authors also provide convincing evidence that the main driver of the obesity epidemic is not a decline in physical activity, but a steadily rise in calorie intakes and a qualitative change in diet composition, that is somewhat mitigated by country-specific cultural traits. The rest of the book then focuses on consumers' food choices and proposes an approach to obesity that will look provocative to many public health advocates and policy makers (especially in Europe). Yet, it is essentially a well-driven application of the neo-classical framework, toolbox and normative paradigm. The main arguments will not surprise economists. They argue that the principle of consumer sovereignty provides a "useful and necessary fiction" to think about the causes of obesity and evaluate the consequences of public policies. This principle implies, in particular, that individuals fully internalise the future health consequences of eating unhealthy products. They balance the expected costs of FRCF against the immediate hedonic rewards from food intakes. As a consequence, they may rationally choose to be obese. In this set-up, prices play a primary role. The decrease in the relative price of unhealthy food vs. healthy food has favoured over time the consumption of energy-dense food products, and explains the long-term trends in FRCF. Changes in time use also matter, as time is money and has its idiosyncratic price: the wage rate the individual (could) earn on the labour market. As already noted by Cutler *et al.* (2003), the rise in women labour supply and progresses in women's rights has increased the opportunity cost of domestic work relatively to the benefits of labour market participation. This has been accompanied by a decrease in the price of processed food, driven by technological progresses in the mass preparation of food. Nowadays, it is often more advantageous for women (or the household meal planner) to work and pay for food services rather than to spend time at preparing meals. As processed food products are often of poor nutritional quality, this would have reinforced the shift toward unhealthy diet. However, given the principle of consumer sovereignty, the technological progress in the mass preparation of food is a priori welfare-enhancing. There are only two normative rationales for government interventions. First, obesity and FRCF generate

externalities, which can take the form of productivity losses or extra medical expenditures. In many countries, especially European countries, these costs are covered by public insurance systems, and therefore passed to all consumers whatever their efforts to maintain a healthy weight and eat fruits and vegetables rather than “junk food”. This kind of ex ante moral hazard problem can, in theory, be solved by appropriate taxes (Strnad, 2005). Second, if there is a lack of information on the demand side, either because consumers are not aware of the diet-health relationship or because the nutritional content of products is unclear, then some government intervention may be justified. It can take the form of public information campaigns (social marketing), nutritional education targeted on specific demographic groups and/or regulation of nutritional labelling practices on food products and restaurants menus. This neo-classical theory of FCRD is developed thoroughly in Chapter 2. Chapter 3 then presents the tools designed by economists, especially health economist, to evaluate public health policies. Chapter 4 reviews the existing evidence regarding the effectiveness of nutrition policy instruments.

While this neo-classical narrative will not surprise economists, it may be stimulating for many health professionals. The latter often consider health as the output of a complex physiological production system, whose inputs (nutrients) would be exogenously determined. Public health policies are based on epidemiological relationship, which tells how inputs and outputs are correlated, but not how one can effectively adjust the inputs. By comparison, the neo-classical framework simplifies the physiological machinery, but assumes that it is an instrument under the perfect control of mind. The focus is on the way individuals choose inputs. One important consequence for the design of public health policies is that they can not be based on simple input-output correlations: Behavioural responses have to be accounted for. For instance, suppose that public health experts reach an agreement about the effect of soft-drink consumption on adolescent health, but use only correlation-based standard of evidence. Taxing soft-drinks may then not be a good solution, as teenagers' behavioural response to a tax may be to increase their consumption of alcohol. The effectiveness of public health policies will also depend on market forces, especially on the reactions of food providers. Chapter 4 of *Fat Economics* illustrates this idea by the example of the 5-a-day information campaign to encourage the consumption of fruits and vegetables. Suppose that this policy increases the demand for fruits and vegetables. If the internal supply of fruits and vegetables is rigid in the short-term, then excess demand will be cleared by a price increase. As a consequence, although informed consumers were initially ready to buy x% more fruits and vegetables, they will eventually increase their consumption by much less than x%. Public health policies are fundamentally bio-policies: They have to consider carefully the feedback systems that ‘naturally’ regulate human societies through their institutions, in particular the Market and the Law (Foucault, 2004).

One may argue that the neo-classical framework is fundamentally flawed, as it lies on unrealistic assumptions. Advances in neuroeconomics as well as results from experimental economics strongly support this objection, and it is true that a naive endorsement of the neo-classical assumptions about human rationality tend to produce always the same “tautological and therefore uninteresting” conclusions, whatever the issue: “Let the free market work!” (Irz, 2009). Yet, the neo-classical framework has one clear heuristic advantage for applied economists. It provides clear guidelines for deciding which variable are endogenous and which variables are exogenous in econometric models. To illustrate this point, consider for

instance the negative correlation between the use of nutritional labels and Body Mass Index (BMI) that is observed in many studies, even after adjusting for a number of factors. A naive interpretation would interpret this correlation as causal. Using labels would help individuals to make better-informed choices. Here, the neo-classical theory of decision proposes an interesting objection. Using labels has a cost – the time spent at reading and understanding information –, and it has also expected benefits, in terms of health. Hence, preference for health has an impact on the decision to use labels. It has also a direct impact on BMI through a number of other decisions that generally can not be modelled by the researcher: physical activity, use of medical services, etc. As such, label use is endogenous, and its negative correlation with BMI might be spurious. Keeping in mind the possibility that consumers are not dumb and are, perhaps, able to take many decisions – once again, the principle of sovereignty –, can help to avoid fallacious interpretations of empirical results.

The only weakness of the book concerns the robustness of the empirical results that are used to support the narrative. This is especially worrying when the authors discuss the effectiveness of policy interventions. As outlined at the end of Chapter 3, robust *ex post* evaluations of public policies are rare due to a lack of data. They generally require that exogenous variations in policy variables, such as tax hikes or mandatory labelling laws, be available. They appeal to the econometric theory of “treatment effects” that has recently unified in a single framework many techniques, including the popular instrumental variable estimator (see Blundell and Costa-Dias, 2002, for a very good survey). Chapter 4 analyses the effectiveness of many policy instruments, but refers to empirical studies that generally do not implement these techniques or, when they do, do not propose robust results. The authors should have recognised that they have more uncertainty to propose to policy-makers than firm evidence.

Fat economics is a good introduction to the economics of food and health, but the book will not inform the reader about the current frontiers of research. In particular, equity concerns are ignored, perhaps because this is traditionally more a concern for health economists than for agricultural economists. However, works by nutritionists on the relationship between diet costs and diet composition clearly show that poor households face important constraints in their choices. This is the case not only because their budget constraint is tight, but also because individuals **have to** eat a minimum daily amount of calories (see *inter alia* Darmon *et al.*, 2002; Drewnowsky and Darmon, 2004). The standard approach to consumer demand yields demand functions that ignore the physiological constraints individual face. This lack of internal validity clearly weakens the ability of empirical analysis based on food demand system to inform *ex ante* or *ex post* evaluation of public policies. Recent findings in neuroeconomics and experimental economics also show that the principle of consumer sovereignty is far from being a realistic assumption and this has important consequences for policy-making. In particular, food marketing has a strong influence on food preferences, which contradicts the economic assumption of preference stability (Grabenhorst *et al.*, 2008; Passamonti *et al.*, 2009; Plassman *et al.*, 2008). These pieces of empirical work clearly suggest that individual preferences can be manipulated by the industry (see also Smith, 2004, for evolutionary arguments). If this is the case, then more regulation on marketing actions is required. Another interesting hypothesis is that eating (especially products rich in fat and sugar) is addictive (Miljkovic D. *et al.*, 2008). If producers design the composition of food products to be addictive (even inadvertently as consumer test panel will likely exhibit

a strong preference for these products), and if consumers are naive about food addiction, then taxing these products may be justified. This does not mean that the neo-classical normative premises must be forgotten, but rather that the main goal of public policies should be to render the consumer sovereignty possible in practice, by appropriate nutritional education programs, and by shaping an environment adapted to learning.

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