

Dietary transition, nutritional and health outcomes, and agricultural and food production and trade patterns: the case of China

Abstract

The linkage between income growth and dietary transition has been highlighted in recent literature, as has been the relationship between dietary choices and health outcomes. In the case of China, rapid income growth and urbanization in the last three decades has indeed triggered a dietary transition towards more animal based products such as meats and dairy products, despite the fact that a portion of its vast population is still suffering from insecurity of basic staple foods. This transition has already had significant impacts on nutritional and health outcomes. While improved calorie intake and greater availability of macronutrients are encouraging development, undesirable health and disease outcomes cannot be ignored. In fact, the latter concern can become even more serious in the case of China as its per capita income continues to grow and its diet becomes more westernized. Additionally, this income-driven dietary change also impacts the supply side through changing agricultural and food production and trade patterns, which also entails food and nutritional security and environmental concerns at the country and global level.

In light of these concerns, recent literature has started to assess nutritional and health outcomes of dietary transition and alternative diets according to diet guidelines and dietary norms. In such assessments, often calculations are made based on nutritional coefficients and diet-disease linkages, without regard to the economic feasibilities and consequences of adoption alternative diets in counterfactual scenarios. After all, changes to autonomous diet trends cannot happen without incentives including public policy; and even if dietary trends are assumed to be changeable, such changes can still lead to adjustment to agricultural and food production, as well as international trade patterns and such adjustments are unlikely to be without cost.

The purpose of this paper is therefore to assess the nutritional and health outcomes of diet transition and alternative diets on the one hand and the associated agricultural and food production and trade effects on the other hand, using the Chinese case as an example.

We base this analysis in a modified GTAP model featuring the demand, production and supply and trade of major agricultural and food products. Taking advantages of recent methodological advances in building calorie and other nutrition data sourced from the FAO into the GTAP model and database, we further represent current and predicted dietary patterns for China in a baseline projection. The projected dietary patterns (defined on both nutritional contents as well as on compositions of product sources) mainly follow the income-driven transition path as reported in recent literature. Then in the alternative scenarios, we impose on the baseline several distinct diets according to official diet guidelines such as those from the WHO and the Chinese health authority, as exogenous changes to consumer demands via shifts of consumer preferences. Simulations of these scenarios will then reveal the production and trade pattern changes that are necessary to accommodate the demand shifts, as well as the associated efficiency and welfare consequences. Realizing that changing dietary trends are likely to be costly, in a more refined scenario, we consider public policy options to influence consumer choices for purposes of reaching a given alternative diet target. Since the costs of the policy intervention will be captured in this case, the welfare cost of an alternative diet will then be fully accounted for.