



FACCE-MACSUR

Prototype of stochastic equilibrium model of the food system

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Abstract/Executive summary

Food security is an issue of risk. If climate change is not responded to with diet, technology and/or policy changes, it may lead to reduced food security for the world population, in particular the poorer part which in longer periods may not afford to purchase food in sufficient quantity and quality. In order to improve the situation, certain policy changes may be required.

In some cases are policy recommendations relatively obvious, while in other cases a deeper insight in the stochastic dynamics of food supply and storage is required to assess the consequences of policy proposals. The relatively obvious part is that farmers need be responsive in periods of low total production, so that sufficient supply restores quickly. Moreover, trade should allow local shortages to be covered. Many national policies with the goal of self-sufficiency aim in the opposite direction with stable prices and production and relatively less flexibility in production.

The stochastic dynamics of food supply can be analysed in more detail with a dynamic stochastic general equilibrium model (DSGE). Although agriculture by nature is about taking decisions under uncertainty, quantitative stochastic dynamic models for policy analysis in agriculture have not yet emerged. The contribution in MACSUR is a formalization of a class of DSGE-s based on representation of biological processes managed with regard to outcomes due to uncertain nature.

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Hoveid, Ø., 2015. A prototype dynamic stochastic equilibrium model of the global food system. MACSUR Conference 2015, Reading, 8-9th April (*Modified 30. August*)