



Deutscher Tropentag, October 11-13, 2005, Hohenheim

“The Global Food & Product Chain—  
Dynamics, Innovations, Conflicts, Strategies”

## Development of an Economic Model for Agricultural Policy Evaluation in China

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### Abstract

China has become a member of the WTO since December 2001. China's accession to the WTO is likely to create the most important change in the country's policy environment for agriculture, both domestic and trade policies. What are the possible impacts arising from China's agricultural policy changes on agricultural production, consumption, and market prices? Will the farmers in different provinces be equally affected? The objective of this study is to answer such types of questions by establishing a Chinese agricultural sector model and applying it to the analysis of the impacts of agricultural policy changes. The model will help the policy makers **(i)** make projections of the future frame condition, **(ii)** evaluate the applied policy and **(iii)** make agricultural policy simulation.

The model is a spatial equilibrium model with 30 regions and 13 crops. The supply system is estimated and calibrated with the generalised maximum entropy method as an alternative to the traditional Positive Mathematical Programming method. Demand parameters are based on other studies from the literature. Foreign trade is modelled with the Armington method. Commodity balance in each region is maintained by a balance equation. A price relation equation ensures that price differentials do not exceed the transportation cost and market margins between the regions. The total model has 11 block equations, 13419 single equations and 13419 variables. The model is written in the General Algebraic Modelling System (GAMS) and solved by the mixed complementarity programming (MCP) solver. Projection to 2010 is made and different trade and domestic policy scenarios are simulated based on the model.

**Keywords:** Agricultural sector model, maximum entropy, mixed complementarity programming, spatial equilibrium