The future of food and agriculture

FOFA QUANTITATIVE MODELING FRAMEWORK

CONSISTENCY IMPOSED ON AGGREGATES AND MODEL ASSUMPTIONS

FAO GAPS

GLOBAL AGRICULTURE PERSPECTIVES SYSTEM PARTIAL EQUILIBRIUM MODEL

MODEL ASSUMPTIONS

- FAOSTAT data for calibration (2011–2013)
- Behavioural parameters for demand and supply respecting microeconomic theory constrains
- Gross domestic product
- Population
- Data on agricultural technologies and productivity from: FAO AQUASTAT, FAO Global Livestock Environmental Assessment Model, FAO-IIASA Global Agro-Ecological Zones database

MODEL FEATURES

- Supply based on price responsive yield and harvested area/herd size functions
- Food/feed/land demand functions
- Price/income-sensitive functions
- Quantities in physical units
- Commodity balances

MODEL RESULTS

- Partial equilibrium quantities and prices
- Crop yields
- Land/feed/pasture requirements
- Net trade by country and good
- Food security indicators, agricultural-related greenhouse gas emissions

ENVISAGE

ENVIRONMENTAL IMPACT AND SUSTAINABILITY APPLIED GENERAL EQUILIBRIUM MODEL

MODEL ASSUMPTIONS

- Global Trade Analysis Project data for calibration
- Price/input substitution elasticities
- Gross domestic product
- Labour productivity based on gross domestic product
- Population for labour dynamics and aggregate demand
- Parameters on agricultural productivity based on GAPS results

MODEL FEATURES

- Sectoral nested production functions
- Food/feed/land demand functions
- Price/income-sensitive functions
- Virtual physical units
- Commodity and macro balances

MODEL RESULTS

- Economy-wide equilibrium quantities and prices
- Labour/land/capital requirements and remunerations
- Imports/exports by country and good
- Economy-wide greenhouse gas emissions indicators

CONSISTENCY CHECKS ON RESULTS AND FEEDBACK ON MODEL ASSUMPTIONS

Food and Agriculture Organization of the United Nations

fao.org/global-perspectives-studies

CA0117EN/1/06.18

©FAO, 2018