Background to the AGLINK-COSIMO Model

Since 2004, FAO and OECD have been working in partnership to provide **ten-year projections** of national, regional and global agricultural commodity markets and to produce annually the OECD-FAO Agricultural Outlook report, which has become a high-profile publication for informing policy debates and resource planning.

This collaboration has been very successful in bringing together the commodity, policy and country expertise of both organizations and this year, we are commemorating the tenth anniversary of the joint outlook work.

The AGLINK-COSIMO Model is a recursive-dynamic, partial equilibrium, supply-demand model of world agriculture. AGLINK-COSIMO provides a comprehensive yearly model of agriculture that focuses on production, consumption and trade and which assumes that agricultural factors do not affect the wider economy as a whole.

The AGLINK-COSIMO model is used to simulate the development of annual supply, demand and prices for the main agricultural commodities produced, consumed and traded worldwide in each of the regions it covers. AGLINK-COSIMO contains:

- 67 countries and regions
- 139 commodities
- 720 attributes

Properties and Characteristics of the AGLINK-COSIMO Model

Assumptions

- World Markets for agricultural commodities are competitive. Buyers and sellers do not behave as if they had market power and market prices are determined through a global or regional equilibrium in supply and demand.

- Domestically produced and traded commodities are viewed to be perfect substitutes by buyers and sellers. Importers to not distinguish commodities by country of origin as AGLINK-COSIMO is NOT a spatial model. This assumption will affect the results of the analysis where trade is a major driver.

- AGLINK-COSIMO is a "partial equilibrium"model for the main agricutlrual commodities. Non-agricultural markets are not modelled and are treated exogenously to the model. As non-agricultural markets are exogenous, hypotheses concerning the paths of key macroeconomic variables are predetermined with no accounting of feedback from developments in agricultural markets to the economy as a whole.

Data Sources and Assumptions for Macroeconomic Projections

The primary source of data for the OECD maintained AGLINK Model, is a yearly questionnaire sent to each country by the OECD. This allows countries to provide accurate historical and projected data, which is then verified by statisticians on a country basis for consistency. Analysts overlay a 'global perspective' to ensure that trade positions are consistent across the world. For the FAO maintained COSIMO Model, FAO uses its in-house market monitoring capacity, further enhanced by the Agriculture Market Information System (AMIS), to generate the database that supports the projection exercise. All initial country projections are produced by the FAO COSIMO Model and reviewed primarily by the commodity specialists of the Trade and Markets Division (EST).

As country specific information becomes available through collaborators, it gets incorporated into the model generator for more accurate results. Modules are developed continuously and accordingly incorporated. Once all country modules function correctly, they are merged into one global model and database. Extensive review by specialists from both organizations, collaborating countries and other experts are performed to ensure that the merged model correctly replicates the individual countries projection results.

In AGLINK-COSIMO, considerable effort was made to retain a calendar year basis for all data.

Data for important exogenous macro-economic variables are obtained from a variety of sources:

- Population estimates from the 2012 Revision of the United Nations Population Prospects database provide the population data used for all countries and regional aggregates in the Outlook. For the projection period, the medium variant set of estimates was selected for use from the four alternative projection variants (low, medium, high and constant fertility). The UN Population Prospects database was chosen because it represents a comprehensive source of reliable estimates which includes data for non-OECD developing countries. For consistency reasons, the same source is used for both the historical population estimates and the projection data.

- World Oil Prices (Brent Crude in USD/Barrel) are based on information provided by the latest OECD Economic Outlook data available for the past years as well as projections for the two years following the period under consideration. This is supplemented with the long-term growth rates provided by the International Energy Agency's World Energy Outlook.

- Real GDPs, GDP deflators, private consumption expenditure (PCE) deflators and exchange rates for OECD countries, Argentina, Brazil, China and the Russian Federation are consistent with those presented in the latest OECD Economic Outlook. For the other economies, historical data is collected from the IMF's World Economic Outlook.

AGLINK-COSIMO Model Applications

The outlook projections depend on the assumption of normal weather conditions and a stable macroeconomic environment. These assumptions are necessary to generate a set of baseline results that can be used to understand market evolutions and to serve as a basis for policy analysis. However, there are many uncertainties concerning these assumptions. Partially stochastic simulations can help to provide more robust projections and scenario results and contribute to a better understanding of asymmetric effects of policies.

Scenario analysis is increasingly used to illustrate the uncertainties around the projection path that can arise from alternative policy settings or different market conditions. The AGLINK-COSIMO partial equilibrium model provides the capability to quantify the likely impacts of a variety of shocks to commodity markets.

AGLINK-COSIMO Website

The AGLINK-COSIMO Website can be accessed at www.agri-outlook.org

Collaborators can access the model, tools, data and information by clicking on ***'Aglink-Cosimo Collaboration Site'*** and logging onto the website.

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***For questions on GBEP Sustainability Indicators

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