

The GTAP-DS (Domestic Support) Model

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This paper presents the GTAP-DS (Domestic Support) model which facilitates explicit analysis of agricultural domestic support and subsidies within the GTAP framework. The GTAP-DS model extends the standard GTAP version 7 model (Corong et. al, 2017) by modifying the current net tax specification in GTAP into two, namely: subsidy and tax wedges. The specification changes cover all equations where agricultural domestic support measures are identified in the GTAP Data Base (i.e., factor, intermediate input and output subsidies). We highlight the usefulness and policy relevance of this approach with a simulation that directly targets agricultural domestic support changes, rather than changes in subsidies net of taxes. As a result, we are able to trace the economic implications associated with changes in agricultural domestic support subsidies alone while maintaining all agricultural taxes in place.

The paper is divided into three sections. The first section provides an overview of the net tax specification in the GTAP framework. The second section begins by explaining how agricultural domestic subsidy flows—which are included in the GTAP Data Base but not read by the model—are used in addition to the net tax revenue flows used by the GTAP model. This section also details the code changes made to separate out subsidy and tax instruments from the initial net tax specification in GTAP. The third section implements a simulation where all agricultural domestic support (input, factor and output) subsidies are eliminated. The simulation results are then decomposed into contributions arising from each agricultural domestic subsidy measure to identify their relative economic importance. The paper concludes with an overall assessment and a discussion on how the GTAP-DS model can also be used to analyze subsidy policies in non-agricultural sectors, since the code changes are generalized to cover all commodities and activities in the GTAP model.

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