An Integrated GTAP and Philippine CGE model with 'real' households

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Summary

The GTAP model is well-suited for analysing global and country-level impacts associated with regional or multi-lateral trade liberalization. On the other hand, although most single-country CGE-microsimulation models assume a single 'rest of the world' trading partner, they are well-suited for analyses focused on country-specific and distributional effects. As such, the combined the use of a global CGE model and a national country CGE-microsimualtion model within a consistent framework may be warranted—especially when detailed national economic modelling and distributional analysis are required.

Since the last decade, two methodologies have been employed to link global and national country CGE models. The first approach, employed by the collection of studies in Hertel and Winters (2006) and Anderson, Cockburn and Martin (2010), is based on a top-down link in which simulation results from a global model (GTAP or LINKAGE) are used as shocks to a national CGE model following the method of Horridge and Zhai (2006). Horridge and Filho (2003) employed an alternative approach in which a national CGE model of Brazil is fully integrated into the global GTAP model. In their application, the Brazilian part of the GTAP model is turned off and replaced by the Brazilian national model.

This paper adopts Horridge and Filho (2003) by integrating (i.e., in a top-down bottom-up fashion) the standard GTAP model with a detailed single-country CGE model of the Philippines with 'real' households. The GTAP model uses a 49-sector and 23-region aggregation. The Philippine model, PHILGEM, uses a SAM with 105 sectors, 14 labour types classified by gender and 7 skill types and 38,400 households drawn from a nationally-representative household survey of Philippines.

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We find it computationally feasible to represent all 38,400 households directly in the model; or, more conventionally, to use a more aggregated CGE model with a few or more representative households. The key to rich detail in household results is a very detailed pattern of connection between core CGE outcomes (earnings by sector) and individual household incomes.