

The Department of Finance General Equilibrium Trade Model: The Structure

The Department of Finance's estimates of the long-run economic impacts of the Canada-U.S. Free Trade Agreement are obtained from simulations with a general equilibrium trade model developed by the Department of Finance in collaboration with Professors Richard Harris and David Cox. The starting point is the general equilibrium model employed by Harris and Cox in their analysis of trade liberalization and industrial policy for the Ontario Economic Council and their study for the Royal Commission on the Economic Union and Development Prospects for Canada⁽²¹⁾.

The Department of Finance's general equilibrium trade model is in the tradition of applied general equilibrium modelling in that it focuses on the allocation of the economy's limited resources among competing uses. The model assumes full utilization of resources so that changes in relative prices lead only to a shift in employment across sectors with no change to the overall level of employment unless the supply of labour changes. The model provides estimates of the long-term, or permanent, effects of policy changes once the economy has fully adjusted to the new policy environment. The primary data source for the Department of Finance general equilibrium trade model is the 1981 Statistics Canada input-output tables of the Canadian economy.

1. General Features of the Model⁽²²⁾

Three factors of production are included in the model: capital, labour and materials. The three factors are substitutable in response to changes in their prices.

Labour and capital are mobile across sectors in Canada, but only capital is assumed to be mobile internationally. The model, in a limited sense, is a three-region model: Canada, the United States and the rest of the world (ROW) are identified. Although changes in Canada's export prices influence demand by the United States and the ROW, income and activity outside Canada are assumed to be unchanged in the trade liberalization scenarios. (In other words, the possible income changes in the United States as a result of free trade with Canada are not captured by the model.) Import prices are fixed on the assumption that Canadian demand for imported goods is too small to affect world prices. In contrast, the supply of Canadian exports affects their prices in the Finance model.

These assumptions about export and import prices mean that reductions in trade barriers between Canada and the United States may cause a deterioration or an improvement in Canada's terms of trade. Lower domestic trade barriers result in an increased supply of exports, as resources are shifted from import-competing to export-oriented industries, and this puts downward pressure on export prices. Lower production costs due to rationalization also result in lower export prices. On the other hand, the reduction in U.S. trade barriers allows Canadian producers to raise export prices, since part of the burden of current U.S. barriers falls on Canadian producers.

⁽²¹⁾ R. G. Harris, with David Cox, *Trade, Industrial Policy and Canadian Manufacturing*, Ontario Economic Council, 1983; and, "Summary of a Project on the General Equilibrium Evaluation of Canadian Trade Policy", in *Canada-United States Free Trade*, Research Studies Volume 11, J. Whalley, Research Coordinator, University of Toronto Press, 1985.

⁽²²⁾ A detailed description of the Department of Finance general equilibrium trade model will be available in a forthcoming Department of Finance Working Paper.