Brazil will all become much more important destinations for Canadian exports going forward.

The Gravity Model of Trade

The gravity model of trade is a commonly used tool to analyze trade flows between countries. The name *gravity* is given to this model because, similar to the model used in physics to explain the gravitational force between two bodies, it shows that the trade between two countries is mainly a function of the economic size of the two countries and the distance between them. The model is widely used for many reasons. First, the model has high explanatory power, meaning the model provides a good prediction of current trade flows. Second, the model generates consistent results: different gravity models applied to different countries, regions, and time periods yield similar findings. Gravity models of trade also allow for the addition of other variables that impact trade, such as common language, membership in the WTO, and bilateral free trade agreements. The following gravity model was designed to explain Canada's merchandise exports.

Exports = F(GDP, distance, WTO membership, FTA, landlocked, language, U.S.)

where,

exports is Canadian merchandise exports to each individual country in 2007;

GDP is real GDP of the export market;

distance is the partner country's distance from Canada; and,

the other terms are dummy variables for WTO membership, a free trade agreement with Canada, being landlocked, and having English or French as a spoken language. Finally a special dummy variable was introduced for the U.S., because it shares a land border, and a unique economic relationship, with Canada.

The model is based on 175 observations and has a high explanatory power, accurately predicting roughly 90 percent of Canada's current merchandise exports. This model was then shocked using a private third-party forecast for long-term GDP to give a prediction of Canada's future exports in 2040. Because GDP is the only variable allowed to change[1], it is the difference in each country's relative GDP growth that drives the forecast for Canada's trade.

GDP Forecast

IHS Global Insight (GI) provided the forecast for GDP growth to 2040 used in the model. GI predicted that by 2040 world GDP will increase to more than two and a half times its current level, from approximately US$50 trillion to US$130 trillion. Most of this growth will come from the emerging markets, especially in the emerging Asia-Pacific region. By 2040 the emerging Asia-Pacific region will constitute 32 percent of global output, up from 16 percent in 2009. Advanced economies will fall from 68 percent of output in 2009 to 48 percent in 2040. Other emerging markets in Latin America and Caribbean, Europe, the Middle East and Africa will also witness their share of global GDP

1 Variables such as WTO membership and free trade agreements are assumed to remain constant, while others such as landlocked or distance do not change over time.