Using Dynamic General Equilibrium Models to Quantify the Macroeconomic Impact of Protectionist Trade Policies

Topic: Modelling the effects of Brexit I
Author: Joseph Bowlin Steinberg

The spectre of protectionism looms large over the world economy, raising an urgent need for macroeconomists and trade economists to provide accurate quantitative answers about the impact of potential protectionist actions. Input-output data has been used extensively to study the long-run effects of increases in trade costs, but few researchers have used this data to analyze important questions about the dynamic effects such as:
- How costly is the process of adjustment that follows an increase in trade costs?
- What is the impact of increased trade costs on trade imbalances?
- Is uncertainty about trade policy costly?

In this paper, I develop a dynamic general equilibrium model with a rich multi-sector, input-output production structure and use it to analyze the short- and long-run consequences of two high-profile forms of protectionism: Brexit and NAFTA termination. My quantitative approach is to calibrate the model's parameters so that its steady state replicates input-output data from the World Input Output Database (WIOD), and then use global methods to solve for the transition equilibrium that follows unexpected changes in trade policy.

In my application to Brexit, I demonstrate how the model and its solution method can be extended to include heterogeneous firms that pay sunk exporting costs as in Das et al. (2007) and to incorporate uncertainty about the form that Brexit will take. I find that the total consumption-equivalent welfare costs of soft and hard Brexit are 0.4 and 1.2 percent, respectively, but less than a quarter of a percent of these costs are due to uncertainty.

In my application to NAFTA, I demonstrate how the model can be extended to include trade adjustment costs that can be calibrated so that the model delivers endogenous trade elasticities that are low in the short run and high in the long run. I find that NAFTA termination would cause regional trade flows to fall dramatically in the long run, particularly in
sectors like agriculture, where tariffs and trade elasticities are high, but the transition to the new post-NAFTA equilibrium entails a lengthy adjustment process. Moreover, contrary to U.S. President Trump's claims, NAFTA termination would have little impact on regional trade imbalances.