Modelling FDI and Affiliate Sales

This paper provides an overview of the GTAP model version 7 (Corong et al., 2017) with foreign direct investment (FDI) and foreign affiliate sales. We begin by following the FDI and affiliate sales implementation by Lakatos and Fukui (2014), with an Armington nest for sales by country of origin of parent companies and the inclusion of foreign direct investment. We then modify the allocation of FDI to facilitate an economic link between FDI and affiliate sales. To do this, we set up a structure wherein capital used by foreign affiliates from region s, can directly draw on investment from their parent companies. This implies that foreign affiliates in activity a, from region s located in host region h could use both capital available in their host region h and from parent region s. We also model investment allocation—i.e., to portfolio investment (which goes to the global bank) and to foreign affiliate sales—using a CET function, following Petri (1997) and the FTAP model (Hanslow and Verikios 2000). Similar to Tsigas and Yuan (2020), we also explore the substitutability between exports and affiliate sales. We find that the link between affiliate sales and FDI is an important mechanism not accounted for by the standard global models. This is because a fall in production cost by a foreign affiliate located in region h induces an increase in demand for commodity it produces, which in turn raises its sector-specific return to capital and the FDI going to the host region. Similarly, a fall in trade costs in region h eases the entry of exports to this region, thereby making affiliate sales less attractive and in turn a reduction in FDI going to the host region h.