The value added of introducing heterogeneous technologies in CGE models with implications on trade liberalization

Topic: 711W Special session: APEC TiVA: SUTs with Firm Heterogeneity (1)
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Conventional CGE models for Chinese trade policy analysis do not differentiate processing export and the rest of the Chinese economy. Examples include the model developed by Chinaâ€™s Development Research Center (the DRC model), which focuses on the Chinese regions, and the standard GTAP model (Hertel and Tsigas 1997). Economists have attempted to separate normal and processing trade in a CGE model for China (Ianchovichina et al. 2000, Wang 2003, Ianchovichina 2004, Ianchovichina and Martin 2004). Recently, with the availability of Chinese trade data on processing trade, Koopman et al. (2013) is able to split the processing trade sector and treats it as a separate economy in a GTAP-turned GVC model. The split, however, is largely based on assumptions on key input-output coefficients and does not further differentiate the normal export and domestic production types.

DPN IOT, a tripartite input-output table was pioneered by Chen et al. (2001) and Chen et al. (2012) and in 2012 was designated as China's official participating project in the WTO/OECD â€œMade in the Worldâ€• initiative. Therefore, it has good real data support in splitting the three parts. Based on 2010 DPN IOT, a tripartite CGE model known as DPN GEM was developed to study trade growth impacts of China's structural reforms (Pei, Yang and Yao, 2015).

Our proposed modeling work is an improvement along this line and it is made possible through construction of a tripartite social accounting matrix (DPN SAM). This DPN SAM, including a DPN IOT and with 2012 as its base year, constitutes the database for an upgraded ORANI type China CGE model, i.e. the DPN GEM. We will test the model with a policy exercise, which shows the strengths of incorporating heterogeneous technologies in CGE models.