

Structural Change, Income Distribution and Growth: An application of China's DPN GEM

Topic: (4.5) CGE Modelling (2)

Author: Jiansuo PEI

Co-Authors: Cuihong YANG

When Xi Jinping took office in late 2012 as China's top leader, his administration inherited an economy ridden by excess production capacity, depressed consumer demand and unsustainable high growth rates, all due to long time credit expansion towards industries dominated by state-owned enterprises. The new administration has pledged to correct the distortions over his 10-year tenure to achieve sustainable and inclusive growth. Central to his reform agenda is to rebalance the economy and put the economy on a growth path driven more by consumer demand and innovation, and less by export and debt-financed investment. Market is to be given a bigger role to guide the restructuring process.

At the same time, the "Silk Road Economic Belt and the 21st-Century Maritime Silk Road," or the "One Belt and One Road" (OBOR) initiative, is being promoted in part to help destock the excess domestic production capacity. The initiative will also lead to increased exports as the production linkage is shaping up between China and the OBOR countries with Chinese firms as lead firms in the regional value chains, as observed in Yao et al (2014). The expected increase in normal exports to these countries mirror the slowdown of China's processing trade, as US outsourcing to China reaches its potentials (Constantinescu et al, 2014), FDI in assembly and processing sector seeks cheaper labor in other countries, and Chinese processing firms have learned to become producers of R&D intensive parts and components.

What would be the state of the Chinese economy in 2022 when Xi's two-term tenure ends? For this set of complex policy initiatives, theory cannot predict the signs of their impacts, much less about the magnitudes. Econometrics methods are good at analyzing policies with rich historical data, but are less effective in dealing with structural changes. To quantitatively evaluate the income and growth impacts of China's structural reform under Xi, we need a China CGE model that can accommodate the policy shocks described above.

China's economy has a tripartite feature: two trade sectors (normal N and processing P trade) and one domestic production (D) sector. Conventional CGE models for Chinese trade policy analysis do not differentiate processing export and the rest of the Chinese economy, such as the standard GTAP model (Hertel and Tsigas, 1997). Economists have attempted to separate normal and processing trade in a CGE model for China (Ianchovichina, Martin and Fukase, 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 from the rest of Chinese economy and treats it as a separate economy in a GTAP-turned GVC model. The splits, however, are largely based on assumptions on key input-output coefficients and do not further differentiate export and domestic production sector.

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 DPN GEM. Following Pei, Yang and Yao (2015), we first update the 2012 data in our model to 2016 with real data: I, C G, normal and processing exports. Considering China is a large country, we reduce the substitution elasticity between imports and domestic products following the literature (Hillberry and Hummels, 2013). This produces a 2016 dataset that fits well with GDP, normal and processing imports. In so doing, we derive the unobservable variables: K-saving and Hicks-neutral technological progress, to reflect the country's FDI and innovation impacts respectively.

With the updated 2016 data, we do baseline projection from 2016 to 2022 with growth rates

extrapolated from 2012-16 update exercise. Against this baseline, counterfactual simulations are conducted to reflect (i) adjustment of US outsourcing to China, and (ii) China's domestic structural reforms, and (iii) China's OBOR initiative. Various policy combinations will be experimented against this baseline scenario as they deviate from the normal growth path.