Structure decomposition analysis of Chinaâ€™s digital economy on economic growth

Topic: Special Session: Digital IO Accounting: Methodology and Applications (1)
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The digital economy is a new economic form that has emerged with the extensive integration and deep penetration of digital technology into various industries of the national economy. Measuring the effect of the digital economy on the entire economy could provide insights to facilitate economic development. This study tries to split the production chain into three parts: traditional cycle indicating economic links between traditional industries in the production chain, digital cycle indicating links between digital sectors, and digital-traditional integrated cycle indicating links between traditional sectors and digital sectors. According to the macro-data and national digital industry classification published by National Bureau of Statistics, we try to construct national digital input-output tables which have 174 sectors, including 129 traditional sectors and 45 digital sectors. Then, we quantify the contributions of these three cycles during 2012-2020 in China combining three cycles and the extended input-output model, and identify the critical impact factors referring to the digitization of economic growth through the structural decomposition analysis (SDA) which considers the correlation of value-added intensity and direct consumption coefficient.

The results show that China's economy is gradually characterized by an integration economy. The value added driven by digital cycle increased from 5.18 percent in 2012 to 6.56 percent in 2020. A similar ascending trend could be observed in the digital-traditional integrated cycle, which was from 2.97% to 3.75% from 2012 to 2020. In terms of digital industries, the digital product manufacturing declined while the digital technological application climbed. It indicates that digitalization is gradually significant in Chinaâ€™s economy and the digital technological application should be noticed. The structural decomposition analysis shows that the positive pulling effect of final demand on China's economic growth has significantly weakened. In the production structure, the negative restraining effect of non-digital inputs has been significantly strengthened and has become the biggest obstacle restricting China's economic growth at present. The positive promoting effect of digital inputs on economic growth is gradually increasing. Stabilizing China's economic growth requires simultaneous efforts from both the demand side and the production side, especially the urgent need for digital transformation to optimize the production structure.