Pattern changes in determinants of Chinese emissions

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Abstract

Chinese economy has been recovering slowly from the global financial crisis, but it cannot achieve the same rapid development of the pre-recession period. Instead, the country has entered a new phase of economic development – a “new normal”. We use a structural decomposition analysis (SDA) and environmental input-output analysis (IOA) to estimate the determinants of China’s carbon emission changes during 2005-2012. China’s imports are linked to a global multi-regional input-output (MRIO) model based on the Global Trade and Analysis Project (GTAP) database to calculate the embodied CO$_2$ emissions in imports. We find that the global financial crisis has affected the drivers of China’s carbon emissions growth. From 2007 to 2010, the CO$_2$ emissions induced by China’s exports dropped, whereas emissions induced by capital formation grew rapidly. In the “new normal”, the strongest factors that offset CO$_2$ emissions have shifted from efficiency gains to structural upgrading. Efficiency was the strongest factor offsetting China’s CO$_2$ emissions before 2010 but drove a 1.4% increase in emissions in the period 2010-2012. By contrast, production structure and consumption patterns caused a 2.6% and 1.3% decrease, respectively, in China’s carbon emissions from 2010 to 2012. In addition, China tends to shift gradually from an investment to a consumption-driven economy. The proportion of CO$_2$ emissions induced by consumption had a declining trend before 2010 but grew from 28.6% to 29.1% during 2010-2012.