

Impacts of Environmental Regulation on Technical Efficiency and Productivity Loss in China

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Abstract: This study employs radial efficiency measure of Data Envelopment Analysis (DEA) to compute output distance functions which can show technical efficiencies for the strong and weak disposability of pollutants. We define the environmental efficiency index (EEI) as the ratio of two technical efficiencies so as to calculate productivity loss which can be estimated as GDP multiplied (1-EEI). The study focuses on 28 provinces and municipalities in China, which are divided into three regions, including the East, the Middle and the West. We find that the East paid the largest cost for environmental regulation among three regions. The rate of productivity loss of the East for environmental regulation is 4.24% while those of the Middle and the West are 1.53% and 1.72%, respectively. In addition, we also find that productivity loss from controlling wastewater is larger than that from controlling SO₂ for all the country. The rate of productivity loss from environmental regulation for wastewater is 1.43% whereas that from regulation for SO₂ is 0.46%.