

Evaluating the Impacts of Waste Treatment Management Modes on Each Sector's Price in a Macro Economic System

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This paper created an Input-Occupancy-Output (IOO) table that was integrated with several alternative waste treatment management modes. Based on this table, a Ghosh price model was developed to evaluate the price changes in each sector compared with their traditional prices for the direct and indirect impacts of the costs of waste treatment management modes. The model was applied to the waste water treatment case in China. The data were sourced from the China Statistical Bureau and a survey made by Tan et al. (2015). In each waste treatment management mode, the price change of each sector was evaluated. The results revealed that different waste treatment management modes generated different ranks for the price changes by sector. The total price increase for all industries (TPI) in the centralized treatment mode (CTM) is 32.7% smaller than that in decentralized treatment mode (DTM). An optimal combination of DTM and CTM for all industries was found that has a 90.2% and 85.5% decrease of TPI than that of DTM and CTM respectively. Among the 42 industries, 22 industries recorded an OI >50%, which revealed that the indirect impacts from all the other sectors on their prices were larger than those generated by the sector itself. To limit the waste water discharged in China, one possible intervention would be to increase the fine imposed for unit waste water discharged, setting it at a higher level than the unit waste water discharge fee and its treatment cost. Furthermore, it is suggested that the waste water treatment cost needs to be reasonably incorporated in the products' prices. The model proposed in this paper will be particularly appropriate to evaluate these price increases and their impacts, which is also the innovation of this paper.