Economic Impacts of Air Pollution Induced Health Loss in China

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Particulate air pollution has caused considerable health damage in China, such as cardiovascular and respiratory disease which induced great mortality and morbidity. Such health damage could be translated to labor availability and labor time loss. This paper utilized a supply-driven Input-Output (I-O) model to estimate the monetary value of total output loss resulted from decreasing working year due to air pollution related diseases across 30 Chinese provinces in 2007. PM2.5 emissions are used as an indicator to assess air pollution induced health impact. The developed I-O model could capture direct economic costs and the indirectly cascading effects throughout inter-regional production supply chains. The indirect effects seriously outnumber the direct effects in most of Chinese provinces and thus are indispensable. Our results show that a total of 988.85 billion Yuan (~ 3% of national Gross Domestic Production) is lost based on 72 million affected employees (among total labor population of 712 million) who lose 32.98% reduction in years of labor time (hospital admissions and outpatient visits) in China in 2007. The result appears to far exceed any findings in relevant literature. In order to sketch a more comprehensive picture of both direct and indirect economic losses, we recommend the application of supply-driven I-O model to estimate air pollution related health costs occurred on the supply-side and incorporate risk, impact and inter-dependency analyses in health costs prediction.