A Spreading Malaise: Manure Management, Air Pollution, and Health Outcomes in Italy

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Abstract

Manure management is a widespread soil fertilization practice in agriculture. Yet, little is known about the environmental and health threats posed by manure application. I estimate the causal effect of manure spreading on fine particulate matter concentrations, as well as respiratory and cardiovascular hospitalisations, mortality rate at discharge, and medical treatment costs using air quality and hospital discharge data from the Lombardy region in Italy. I exploit exogenous variation in spreading prohibitions to design a repeated event-study framework. I estimate an increase of around 27% in PM2.5 concentrations in the five days following a ban lift, paired with an increase in urgent hospitalisations, and higher hospital mortality rate during spreading events. Conversely, it is found no significant difference in the cost per hospitalisation. I estimate the financial burden limited to this health threat to range between 30.9 and 67.7 million euros per year. Finally, I test the implications of a fully flexible regulatory framework to redistribute emissions over the winter calendar, estimating a reduction in days exhibiting harmful levels of PM between 13.1% and 3%.

Keywords: Air Pollution; Pollution Control; Livestock Farming; Cost Benefit; Environmental Health and Safety

JEL Classification: Q00; Q51; Q53; K32; I18

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Thank you for your interest in my work. We are currently in the process of validating an updated version of this paper with the Ministry of Health to ensure compliance with data protection regulations.

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