

An Empirical Model of Agricultural Subsidies with Environmental Externalities*

Tristan Du Puy[†]

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Abstract: *Agricultural subsidies are ubiquitous around the world and represent a significant fraction of government spending. In the European Union, they account for 45% of all federal expenditures since 1980. While a large literature has shown their negative impact on economic surplus, we know little about how they interact with the environmental footprint of agriculture. As such, their equilibrium effect on a welfare criterion which values both remains elusive. In this project I leverage administrative data with both reduced form and structural analysis to study their impact on economic surplus and chemical pollution. A shift-share design based on the largest reform of EU subsidies to date shows how concomitant decreases in subsidy levels and changes in their design reduced farm profit, and led to exit and reallocations. The reform also lowered chemical use and water pollution as measured via remote sensing. In an empirical model of farm dynamics, where producers differ both in efficiency and propensity to pollute, I find that more productive farms pollute on average more. Subsidies that reduce selection on productivity hence reduce pollution, while also increasing costs. Those that shift the incentives for the use of polluting inputs can replicate part of the welfare gains of Pigouvian taxation.*

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[†]Du Puy: School of International and Public Affairs, Columbia University (td2631@columbia.edu)