

Impacts of Climate Policy and Natural Disasters: Evidence from China

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Abstract

Emissions Trading Schemes and Directed Technological Change: Evidence from China

This paper examines the impact of carbon emissions trading schemes (ETS) on technical change proxied by the number of green patents in the context of the pilot ETS in China. I find a small increase of 0.16 patents per firm and year. A 10 percent increase in carbon prices increases green patents by 2 percent. The strongest effects are for the two regions in the upper range of carbon prices and for more productive firms. However, there are contrasting patterns at the extensive and intensive margins of green innovation: the pilot ETS reduces entry into green innovative activities but increases levels of innovating for firms that were innovative before they were regulated by ETS, especially for the more productive firms. This indicates that an important policy challenge is to encourage the firms covered by ETS to start innovation in green technologies; this applies particularly to the larger and more productive firms.

Keywords: carbon pricing; directed technological change; innovation; heterogeneous firms

JEL Codes: Q54, Q55, O44, O33, L38

Heterogeneous Responses to Carbon Pricing: Firm-level Evidence from Beijing Emissions Trading Scheme

Using a fuzzy regression discontinuity design on a unique emissions and allowances dataset for firms participating in Beijing's emissions trading scheme (ETS), we study firm behaviour facing a carbon price. We find that on average, the ETS reduces carbon emissions by 39%. Firm responses vary: emissions are reduced by about 45% (mainly by reducing coal use) in the industrial sector but hardly change in the service sector. By exploring the effects of allowance allocation on emissions reduction, we further find that free allowances may dampen firms' abatement, although only for small firms or firms in the service sector. An additional ton of allowances is associated with about 0.14 to 0.4 ton of additional emissions, which could partially explain the null effects of carbon pricing on service firms.

Keywords: carbon pricing; independence property; transaction costs; emissions reduction; allowances

JEL Codes: Q54, D23, Q42, L38

Assessing the Supply Chain Effect of Natural Disasters: Evidence from Chinese Manufacturers

This paper uses Chinese firm level data to detect the international propagation of adverse shocks triggered by the US hurricane season in 2005. We provide evidence that Chinese processing manufacturers with tight trade linkages to the United States reduced their intermediate imports from the United States between July and October 2005. We further show that the direct exposure to US supply shocks led to a temporary decline of firm exports between September and November 2005, although we do not find consistent evidence of international propagation of supply shocks along global value chains. Moreover, the paper finds that firms with more diversified suppliers tend to be less affected by the US hurricane disaster, pointing to firm sourcing diversification as a way to increase resilience to adverse shocks.

Keywords: production networks; resilience; diversification; shock transmission; supply chains; natural disasters

JEL Codes: F12, F14, F15, F61, D56, L14, E23

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