

## What Explains the Air Pollution Changes in China:

Trade or technology?

### PROBLEM

Air pollution in developing countries poses major challenges to human health and quality of life. However, a large fraction of emissions are a result of manufacturing for developed countries. There is some evidence that heavily polluting industries relocate from developed to developing countries, often known as “pollution havens,” in order to take advantage of less stringent regulations. Less widely recognized is the possibility of an effect in the opposite direction, known as the “gains from trade” hypothesis. Recent papers find evidence in favor of the “gains from trade” hypothesis in China, which notes that Chinese exported goods have become less pollution-intensive in recent years. The transfer of clean production techniques from developed countries with better technology to developing countries, such as China, a phenomenon termed the “technology effect” may prove this hypothesis to be true.

The key to untangle the impact of simultaneous changes in trade and technology is plant-level information about production and emission. For example, a popular study used US administrative data on plant-level production and pollution to find that falls in pollution emissions in the US are generally due to decreasing pollution per unit of output within narrowly defined products, rather than to changes in the types of products produced or changes to the total quantity of manufacturing output.



### GUIDING QUESTIONS

**Do Chinese firms produce less pollutant when they are more engaged in international markets?**

**If so, do they produce less polluted products or the same products with less pollutants?**

**Do Chinese firms invest more in abatement technologies when engaged in global markets?**

## PROJECT DESCRIPTION

Using plant-level data emerging from an annual Chinese survey of industrial firms, Chinese customs, as well as data of emission levels from the Ministry of Environmental Protection, this paper will study how changes in trade and productivity have contributed to the change in pollution emissions in China. This study will also use the list of environmental goods endorsed by the Asia-Pacific Economic Cooperation (APEC) to test whether export production improves air quality in China through the adoption of green inputs.



## IMPACT

This study will work to understand the impact of simultaneous changes in trade and technology on changes in Chinese air pollution and provide background for further studies, such as field experiments measuring the impact of air quality and air filtration on building occupants' health, productivity and thermal comfort.

**Estimate the pollutants produced with different products.**

**Estimate the impact of trade on Chinese air quality.**

**Estimate the technological impact of international trade on Chinese air quality.**



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