

# CAUSAL IMPACT OF THE EU'S LARGE COMBUSTION PLANTS DIRECTIVE

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## Overview

This paper offers the first causal impact assessment of the Large Combustion Plants (LCP) directive on flue emissions rates from thermal combustion plants in the European Union. Specifically, I examine whether the environmental regulation, that set emission limits on sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and particle dust, applicable to all combustion plants with a rated thermal input of 50 MWth or more irrespective of the type of fuel used, was successful in the abatement of total annual pollution from individual installations.

## Methods

The empirical analysis is conducted using the most comprehensive plant-level emissions database collected by the European Environment Agency for the years 2004 – 2015. The LCP directive was first adopted by the European Council on 24 November 1988, and then subsequently revised in 1994 and 2001. In particular, the implementation of the directive resembles that of a natural experiment. In that, the combustion plants were subject to three separate treatment arms (regulatory provisions). The emission limits values of the controlled pollutants varied in intensity depending on the date of licensing or operation. For example, new plants that came into operation after November 2003 (“new-new” plants) were exposed to significantly more stringent regulation than those licensed before 2002 (“old-new” plants) or 1987 (“existing” plants).

The identification of the regulation's effects comes from the differences in flue emission rates between the three treatment arms (subject to different emission limit values) in a fixed effects regression framework, that accounts for unobserved heterogeneity between countries over time. I further control for observed characteristics like plant capacity, fuel type, age of the plant, and industrial sector that likely affect the flue emission rates and are correlated with the implementation of the LCP directive.

## Results

Preliminary results, subject to improvement and extension of the dataset, indicate that the LCP directive was effective in reducing the flue emission rates of the controlled pollutants, most notably that of nitrogen oxide (NO<sub>x</sub>).

## Conclusions

The choice of policy instrument for effective pollution control in the complex regulatory context of the European Union is an important decision. The large combustion plants (LCP) directive was a major EU environmental regulation (further amended in 2010 and now called the Industrial Emission Directive). Evidence from the empirical study in this paper suggests that the LCP directive was an effective instrument in pollution abatement.

## References

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