

Environmental Policy and Labor Demand in China

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How does environmental policy impact employment? There is a long-standing debate about whether environmental regulations reduce jobs, which in turn may dampen productivity and economic growth. Some show that environmental regulations reduce employment (Greenstone 2002). This could occur through layoffs due to a decrease in output or closure of firms in sectors where environmental stringency increases production costs. Others find that environmental policies can actually create jobs (Morgenstern, Pizer and Shih 2002; Yamazaki 2017), possibly because firms invest in abatement and labor is needed for such efforts.

However, most of the empirical studies examining this question do not address how regulation affects employment within the economy as a whole. They focus on the impact on regulated industries, yet decreases in employment in regulated industries could be offset by increases in unregulated industries. The literature also tends to study firms in developed countries. Understanding the implications in a developing country context is increasingly important as governments aim to simultaneously protect the environment and drive growth. There are therefore at least two key open questions. First, what are the impacts of environmental policy on jobs within the economy as a whole? While environmental policy may reduce jobs in regulated sectors, it is also possible that jobs shift from polluting industries towards relatively cleaner ones. Second, what are the effects on labor demand in a developing country context? Firms in developing countries may respond to environmental policy incentive structures quite differently, and there are often questions about whether environmental policies are enforced in practice if institutions are weak.

In this paper, we address both of these questions by studying the impact of environmental policy on labor demand in China. We use firm-level data and employ a difference-in-differences approach to estimate the causal effect of the Two Control Zones (TCZ) policy on employment. The TCZ policy was implemented in 1998 in an effort to reduce SO₂ emissions—one of the most important sources of air pollution in China—imposing stricter regulations in 175 prefectures across China. Prefectures were assigned with TCZ status according to their annual ambient SO₂ concentration and precipitation pH values. The regulated regions account for nearly half of China’s total population and more than half of its Gross Domestic Product, making it a particularly important environmental

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policy to study in the context of its impacts on employment.

We obtain data on Chinese firms from China’s Industrial Enterprise Database (CIED), which includes between 24,000 and 412,000 firms per year in mining, manufacturing, and power sectors over the years 1996 through 2008. Using firm-level data allows us to overcome a key identification challenge. Since TCZ-status is not randomly assigned, firms in TCZ zones differ across various observable characteristics relative to those in non-TCZ zones in years preceding policy treatment. Using firm-level data allows us to construct a panel of firms that appear at least once before and once after the policy is implemented so that we can include firm-level fixed effects, controlling for these differences. We include a rich set of other firm-level controls as well and we enhance this dataset with city-level data from the China City Statistical Yearbook for additional controls.

Preliminary results show that stricter environmental regulation leads to a positive and statistically significant impact on labor demand on average. Employment increases by approximately 8% for firms located in TCZ prefectures compared to those in non-TCZ prefectures, suggesting that the policy stimulates employment growth. However, the effect differs across industries. We employ a triple-difference approach to show that the positive employment impact on dirty firms is lower than it is in clean sectors, such that the total effect on dirty firms is statistically zero. That is, the policy has no effect on employment in dirty sectors but it stimulates employment in cleaner sectors. One potential concern is that the environmental policy was simply not properly enforced, however we are able to rule this out by obtaining additional pollution data at the city-level and showing that the policy was indeed effective in reducing SO₂ emissions. Our results are robust to various robustness checks, and continued work is exploring the distributional implications, such as the differential impacts based upon wage levels and educational background.

This paper makes two key contributions. First, it is among the first to provide evidence on the “jobs versus environment” debate in a developing country context. Studying the impact of environmental policy on labor demand in China is particularly informative given the country’s tremendous growth over the past decade and role in the global economy. The debate regarding a potential trade-off between economic growth and environmental protection is a particularly contentious political issue in China with important implications for development. Second, this paper contributes to the understanding of how environmental policy impacts the economy as a whole as opposed to strictly the regulated sectors that are relatively dirty.

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