

# Research: When Environmental Regulations Are Tighter at Home, Companies Emit More Abroad

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If we want to avoid the most damaging effects of climate change, countries need to work together to limit pollution and keep global warming to under 1.5 degrees Celsius. But countries differ in their approaches towards environmental regulation. Some are trying to reduce carbon dioxide (CO<sub>2</sub>) emissions by enforcing strict environmental policies. Others are considering withdrawing from the Paris Agreement designed to collectively combat climate change - or already have.

This gap makes a difference. Our research finds that global emission levels are *lower* for countries with tighter domestic environmental regulations. One reason for this, we find, is that companies, which are the biggest contributors of CO<sub>2</sub> emissions, emit less CO<sub>2</sub> at home when domestic environmental regulations are strict. However, these companies also emit more abroad, particularly in countries with laxer environmental standards.

Fortunately, the higher foreign emission levels do not outweigh the reduction at home. But if we want to progress to pick up, countries will have to take collective action to bring down overall global emission levels further.

## **Pollution Havens**

Academics have long argued that there is a symbiotic relationship between countries' environmental policies and the degree to which companies pollute. But the causality between these two factors could be bi-directional: countries may adopt lenient environmental policies to attract foreign companies, and/or companies may transfer polluting operations to those countries. Either way, the idea is that polluting activities are more likely to be performed in countries with loose environmental policies - economists call this hypothesis the pollution haven hypothesis (PHH).

Until now, this hypothesis was typically tested using data at the country or industry level, mostly without access to direct measurement of pollution. For example, several studies correlate aggregate industrial activity (e.g. FDI as a proxy for pollution) and the stringency of environmental laws in home countries compared to foreign countries. And studies that use firm-level data do not observe pollution activities directly and often infer them from other variables (e.g., a firm's location or manufacturing decisions).

We used a unique dataset of CO<sub>2</sub> emissions to see whether companies actually pollute more in countries with weak environmental laws and enforcement. Our data includes information for over 1,800 international firms and reports their CO<sub>2</sub> emissions in each country the companies operated in between the years 2008 to 2016. Although the emission figures are self-reported, they are frequently audited and used by institutional investors who monitor the firms. We combined these data with information on the stringency of national environmental policies from the World Economic Forum (WEF).

We conducted various tests to investigate the implications of the pollution haven hypothesis. In particular, we looked at whether companies tend to pollute less at home, but more abroad, given the strictness of environmental policies in their home country. Also, we explore the effects of the "regulatory distance" between a firm's home country and each foreign country (in other words, the difference between the strictness of the environmental regulation in the home and the foreign country), on the likelihood of that firm polluting in that foreign country.

We documented a number of important correlations. Our findings reveal that in countries with tight environmental regulation, companies have 29% lower domestic emissions on average. On the other hand, such a tightening in regulation results in 43% higher emissions abroad. Importantly, although companies appear to emit more CO<sub>2</sub> abroad, stricter environmental policies at home are associated with lower global pollution overall. Tightening of environmental policies in the home country (a one standard deviation increase in environmental regulation within the sample of investigated countries and companies) is associated with about 15% lower global CO<sub>2</sub> emissions overall.

We also explored different factors that might make companies more or less likely to pollute abroad. For companies that are considered to have good governance (using a standard governance scoring that is often used in the literature), we found that the observed effects are generally weaker - when the home country sets strict environmental policies, companies commonly considered to have good governance structures produce fewer emissions at home and export fewer emissions to foreign countries. Thus, it is predominantly the firms with weak governance structures that behave according to the PHH and conduct their polluting activities abroad.

This is interesting as companies can face a tradeoff between pollution and value. At least in the short run, companies may prefer to pollute in order to save on the costs associated with clean production. But good governance mechanisms, such as strong shareholder monitoring, may dissuade managers from pursuing such short-term goals and push them toward production with lower emissions. Good governance is generally associated with an investor base that values corporate responsibility practices and puts pressure on management to pursue socially and environmentally responsible goals, including lower emissions.

We also found that some industries are more susceptible to exporting pollution abroad than others. The heaviest polluters are firms in industries such as electricity, gas and refineries, steam and air conditioning supply, air and water transport, and mineral and metals producers. Our study shows that companies in these industries do not reduce emissions at home while at the same time export more pollution abroad. We argue that this is because strict environmental policies are costly for companies in high-polluting industries, causing them to attempt to mitigate some of the cost by exporting pollution to foreign countries. Consequently, policymakers might have a greater impact on global emissions if they target these high-polluting industries.

Where do companies “export” their pollution? By drawing on empirical methods used in the international trade literature we found that companies pollute more in foreign countries with the least regulation, whose standards fall far below that of their home countries. For example, Trinidad and Tobago, Bosnia and Herzegovina, Slovakia, Suriname, and Barbados are frequently among the top five countries that annually receive most exports of direct CO<sub>2</sub> emissions relative to their GDP. They are also among the countries with the weakest environmental regulation.

Overall, we find support for the idea that companies perform their polluting activities outside their home country when domestic environmental policies are becoming relatively stricter than abroad. Strict environmental regulation is associated with lower company-level emissions at home, but companies then seek to continue those polluting activities elsewhere. Fortunately, we also find that companies pollute less on a global level when their home countries impose strict environmental policies.

Our findings suggest that national regulation can be beneficial, but it can only do so much to effectively combat pollution and climate change. Because of the potential for regulatory arbitrage, countries need to take concerted action to ensure that the overall CO<sub>2</sub> balance will not increase. If no coordinated effort is undertaken to address climate change, major stakeholders, such as large companies, will find ways to at least partially circumvent strict environmental regulations and move their CO<sub>2</sub>-intensive activities elsewhere. Future research should explore the effects of whether changing regulation could alter firm behavior locally and in foreign countries.

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