BUILDING AN ENVIRONMENTAL REGULATION INDEX

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Overview

In the last two decades, many countries have made an important effort on framing their environmental regulations. This trend shows a worldwide increase in environmental concerns. Indeed, not only developed countries, but also new industrialized countries and a number of developing countries have intensified the inclusion of environmental laws in their legal systems. In some cases, this concern has been the result of the pressure that international institutions or developed countries exert on developing countries to improve and preserve their environment (UN, IPCC). In other instances, the pressure to pass environmental laws has been motivated by individuals' demand for more environmental quality. Some evidence suggests that when the quality of the environment deteriorates, individuals change their attitude towards environmental issues and increasingly demand higher environmental quality, this been reflected in their political preferences and voting behavior. This usually puts pressure on governments and leads to an increase in the number of environmental laws passed.

In this paper, we built an environmental regulation index for a cross-section of countries over the period 1830-2015, based on law-intensity variables specific to a number of environmental subjet areas. Although there are some metrics available in the environmental literature, most of them are restricted to a group od developed countrie and/or to a given year (Dasgupta et al., 2002).

The proposed index of environmental regulation stringency provides a new measure of environmental regulation de jure, filling one important gap in the related literature (Hemmelskamp, Rennings and Leone, 2013; Brunel and Levinson, 2013). It is used in this paper to investigate the effect of environmental laws on the respective environmental outcomes.

Methods

In order to consider environmental laws in their different categories, an index is built based on the number of laws passed by each country in specific subject areas. National laws are classified under the following subjects: Ag*riculture, Air and Atmosphere,Cultivated Plants, Energy, Environment General Issues, Fisheries, Food and Nutrition, Forestry, Land and Soil, Livestock, Mineral Resources, Sea, Waste and Hazardous Substances, Water, Wild Species and Ecosysem*. The most targeted subjects have been *Land and Soil, Food and Nutrition, Cultivated Plants and Environmental General Issues*. Specific subindices, which vary by country and year, are also built for each subject area.

In the empirical application that illustrates the use of the proposed index and subindices, a panel data model is estimated taking into account the determinants of environmental quality and the simultaneity between environmental laws and outcomes. The identification strategy consists on using an instrumental variables approach in which an index based in laws targeting a given subject area is used as instrument for the environmental laws in another subject area.

Results

The main results indicate that the intensity of environmental laws has a positive effect on environmental quality. This effect is particular to the specific environmental outcome and the corresponding type of law.

The expected effects of specific type of laws on the corresponding environmental variables are confirmed, validating the intuition behind our underlying model. Laws concerning *Air and Atmosphere* seem to have the strongest effect on local air pollutants. Also *Environmental General Laws* seems to contribute to decrease air pollution and increase forest area. The effect of the environmental regulation proxied with environmental laws is reinforced when excluding federalist countries. This is specially true for PM2.5 and forest area.

In addition, we challenge previous results indicating that international trade is good for the environment (Frankel and Rose, 2005) showing that openness increases water pollution and deforestation, the latter in particular for non-OECD countries.

Conclusions

This papers is the first to construct an environmental-law index for a global sample of countries over a long period of time. It complements other environmental-stringency indices available in the related literature for a smaller number of countries and over shorter periods of time.

The main findinds are that the intensity of environmental laws appear to improve environmental quality.This effect is particular to the environmental outcome variable considered and the type of environmental law.

The results are robust for forest area, for which countries with more extensive regulation in this environmental factor seems to be more successful in preserving their forest. Also the effect of the environmental regulation on decreasing PM 2.5 emissions is robust to changes in the specification.

Although the effects found concerning the environmental laws, their enforcement, and the interaction between both are not always as expected for the overall sample, results are significant and robust for specific groups of countries.

Additionally, environmental laws have a stronger effect on the outcomes concerning local air pollutants, for which statistically significant effects are generally found for Non-OECD countries. Therefore, as a policy recommendation we suggest to apply measures that reinforce the institutions in those countries. More specifically, supporting specific law developments in poor countries would be desirable in order to protect their environment and to fight against climate change.

References

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