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Does eco-certification stem tropical deforestation? Forest Stewardship Council certification in Mexico

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ABSTRACT

Since its creation more than 25 years ago as a voluntary, market-based approach to improving forest management, forest certification has proliferated rapidly in developing countries. Yet we know little about whether and under what conditions it affects deforestation. We use rich forest management unit-level panel data—including information on deforestation, certification, regulatory permitting, and geophysical and socioeconomic land characteristics—along with matched difference-in-differences models to identify the effect of Forest Stewardship Council (FSC) certification on deforestation in Mexico, the country with the third-highest number of FSC certifications in the developing world. We test for a variety of different temporal and subgroup effects but are unable to reject the null hypothesis that certification does not affect deforestation.

1. Introduction

Since its creation more than two decades ago, forest certification has proliferated in developing countries. Forest Stewardship Council (FSC), the leading forest eco-labeling initiative in the tropics, now has certified more than 29 million hectares in 41 developing countries (FSC, 2017). Although FSC standards cover a wide range of issues and have evolved over time, environmental protection—and in particular stemming tropical deforestation—was an important motive for founding the initiative and has remained a central theme (FSC, 2012; Cashore et al., 2006b; Humphreys, 1996).

In principle, FSC and other types of forest certification can generate nonregulatory incentives for sustainable forest management, thereby sidestepping the problems of weak institutions and limited political will that often undermine conventional environmental policy initiatives in developing countries (Auld and Gulbrandsen, 2013; Cashore et al., 2006a; Meidinger et al., 2003). According to advocates, the principal nonregulatory motivations are economic. Certification allows consumers and creditors to select "green" producers and boycott others. That selection, in turn, facilitates price premia and/or improved access to output and credit markets. And those private economic benefits motivate producers to either improve

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their environmental performance or—in the case of already-green producers—prevent it from slipping. In addition to these private economic incentives, certification may help disseminate technical information about best management practices and mold private and public sector actors' environmental preferences and standards (Romero et al., 2013; Rickenbach and Overdevest, 2006). On the basis of such arguments, national governments, bilateral donors, and leading multilateral agencies such as the Global Environment Facility and the World Bank have devoted considerable resources to promoting forest certification in developing countries and increasingly are interested in using it for reducing greenhouse gas emissions from deforestation and forest degradation—that is, for REDD (Brotto et al., 2010; FSC, 2011).[1]

Despite the increasing use of forest certification in developing countries, we still know little about whether, under what conditions, and how it affects forest cover change (Romero et al., 2013; Milder et al., 2012; Miteva et al., 2012; Blackman and Rivera, 2011). To help fill that gap, we use fine-scale panel data on forest cover change along with matched difference-in-differences models to measure the effect of FSC certification on deforestation in Mexico. We focus on Mexico because it is a critical location for FSC certification. Historically, Mexico has had one of the highest deforestation rates in the world, and it currently has 70 FSC-certified forests, the third-highest number in the developing world (FAO, 2011; FSC, 2017). As discussed below, to our knowledge, ours is among the first econometric analyses of the environmental benefits of forest certification to use panel data techniques to control for unobserved confounding factors and the first to focus on Mexico. In addition to filling a gap in the literature on forest certification, our paper also contributes to the broader literatures on the environmental effects of forest conservation programs, eco-labeling, and corporate social responsibility.

The remainder of the paper is organized as follows. The next section briefly reviews the relevant literature. The third section provides background on Mexico and FSC certification. The fourth section presents a theory of change that describes potential causal pathways between certification and deforestation. The fifth section discusses our empirical methods. The sixth section discusses our data. The seventh section discusses our key identifying assumption. The eighth section presents our results. The ninth section presents a series of robustness checks, and the last section sums up and considers policy implications.

2. Literature

Evaluations of the effects of FSC certification on environmental outcomes typically measure these effects by comparing average outcomes for samples of certified and uncertified forest management units (FMUs). The main challenge is controlling for the tendency of FMUs that already manage their forests sustainably to disproportionately obtain certification because they need not dramatically change production practices or on-the-ground conditions to meet certification criteria. Studies that fail to control for preexisting characteristics of certified FMUs typically generate overly optimistic conclusions: in effect, they incorrectly attribute the superior average environmental performance of certified producers to certification when it actually at least partly reflects their preexisting characteristics.

To our knowledge, only five quantitative studies of the environmental effects of forest certification—two published and three unpublished—attempt to control for confounding factors. Results are mixed. Using a matched difference-in-differences estimator along with three-period deforestation data derived from MODIS satellite images, Miteva et al. (2015) find that FSC certification in Kalimantan, Indonesia, reduced deforestation but increased forest cover gaps, which are typically due to selective logging. Using cross-sectional regression, Kukkonen et al. (2008) find that although FSC-certified forest plots in northern Honduras used more environmentally friendly practices, tree regrowth was actually lower on certified plots than on conventional ones. Using a combination of matching and regression to analyze cross-sectional regulatory inspection data, Nordén et al. (2015) find that neither FSC nor Programme for the Endorsement of Forest Certification (PEFEC) certification reduced noncompliance with regulations governing high conservation value areas in Sweden. Using matched difference-in-differences estimators along with panel data derived from Landsat satellite images, Panlasigui et al. (2015) find that FSC certification in Peru did not stem deforestation and that certification in Cameroon had only small effects on clearing. And finally, using cross-sectional matching, Barbosa de Lima et al. (2009) find that FSC certification in the Brazilian Amazon had minor effects on a range of environmental outcomes, which they attribute to the tendency of top-performing FMUs to obtain certification. Not surprisingly, quantitative studies of the environmental effects of FSC certification that do not control for confounding factors tend to generate more optimistic results (e.g., Griscom et al., 2014; Medjibe et al., 2013; Cerutti et al., 2011).

Aside from quasi-experimental methods, at least two other approaches have been used to shed light on the environmental effects of forest certification: interviews with forest managers and other stakeholders (e.g., Ebeling and Yasue, 2009) and analyses of corrective action requests (CARs) issued after third-party inspections of FSC-certified FMUs (e.g., Blackman et al., 2017; Peña-Claros et al., 2009; Nebel et al., 2005). Results of these studies are similarly equivocal.

In addition to helping fill a gap in the evidence base on forest certification, our study also contributes to the literature that uses remote sensing data along with quasi-experimental statistical methods to evaluate the effects on forest cover change of conservation programs and policies (Börner et al., 2016; Puri and Nath, 2015; Miteva et al., 2012; Blackman, 2013). This

[1] Although technically a mechanism under consideration by the United Nations Framework Convention on Climate Change, REDD has come to refer to a broad set of policies wherein the global community, typically led by industrialized countries, rewards developing countries for reducing forest carbon emission below business as usual levels (Blackman et al., 2014).