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A B S T R A C T

The Effect of NAFTA on Energy and Environmental Efficiency in Mexico

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Prior to Mexico's entry to NAFTA, predictions of the consequent impact on the environment in that country ranged from the dire to the very optimistic. This paper investigates NAFTA's outcomes in terms of energy use and the emission of atmospheric pollutants. We can measure energy use and emissions of pollutants in terms of their total quantity as well as the amounts used or emitted per person or per dollar of GDP (energy or emissions intensity). In most developed countries, energy use and pollution emissions per dollar of GDP have been declining over time and the quantities of some air pollutants or their emissions per person have also declined. Part of this decline is due to improvements in technology that result in more efficient use of energy and effective abatement of pollution. From a mainstream economic viewpoint, opening the Mexican economy to free trade and investment flows from the other North American economies might be expected to lead to the adoption of better technology in Mexico, to some specialization of economic activity, and to general economic development.

In the paper, I ask whether entry into NAFTA has made Mexico more or less like the United States and Canada in terms of pollution per capita and per dollar of GDP; what has happened to the trends in the various indicators; and what the consequent effects on environmental quality have been. Energy use and emissions of carbon dioxide, sulfur dioxide and nitrogen oxides are examined using a variety of econometric tests and models. The results show that the extreme predictions of the outcomes of NAFTA have not materialized. Rather, trends that were already present before the introduction of NAFTA continue, and in some cases improve somewhat, post-NAFTA. There is strong evidence of convergence of all four variables across the three countries towards a lower level of emissions per dollar of GDP. Though intensity is rising initially in some cases in Mexico, it eventually begins to fall post-NAFTA. Per capita measures for the sulfur and nitrogen oxides also show convergence to a common level but this is not the case for energy and carbon and the latter variables also drift moderately upwards. The state of technology in energy efficiency and sulfur dioxide abatement is improving in all countries, though there is little if any sign of convergence and NAFTA has no effect on the rate of diffusion of technology. However, total energy use and carbon dioxide emissions increase pre- and post- NAFTA and total NOx emissions increase in Mexico. Only total sulfur dioxide emissions are stable and falling in all three NAFTA partners.