

Environmental deterrence in developing countries: evidence from enforcement actions and fines under the toxics monitoring program of Mexico

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MONITORING AND ENFORCEMENT DATA APPENDIX

Data Appendix

In this Appendix, we describe regulatory activities in more detail. Figure A1 presents the statewide distribution of regulatory activities for toxics inspections, fines, and the log of amounts fined in real US\$. We observed that inspections and fines were higher in Tamaulipas (Northeast industrial corridor), Queretaro, Distrito Federal (Mexico City), Nuevo Leon, and Jalisco (the last three states include the largest metropolitan cities of Mexico). The second panel shows that the log of amounts fined under toxics inspections was highest in Tamaulipas, Queretaro, Jalisco, State of Mexico (Mexico in the bar chart), and Distrito Federal (Mexico City).

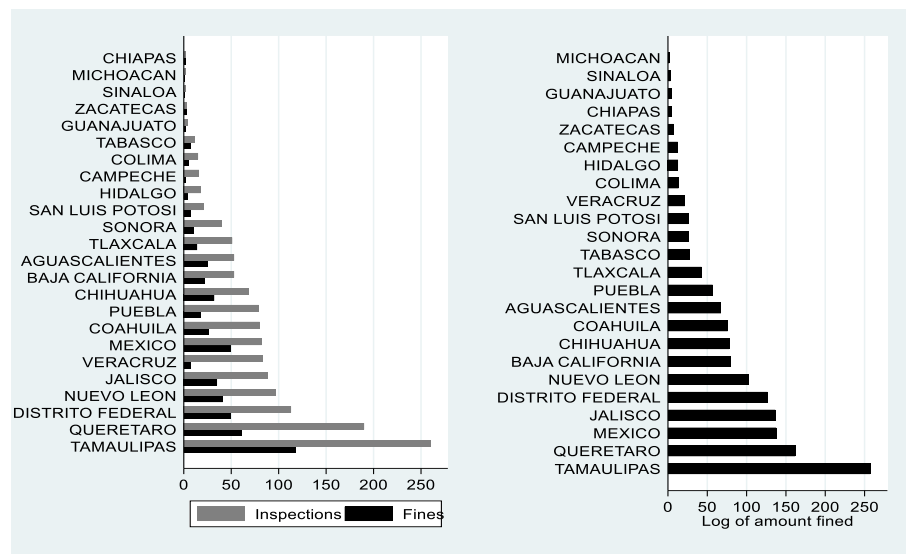


Figure A1. Distribution of the total number of toxics inspections, fines imposed, and log of amount fined by states, 2004-2015.

Figure A2 presents trends in the annual data for the total number of toxics inspections, fines imposed, and the log of amounts fined. From 2004 to 2015, all three indicators of regulatory activities exhibit a declining trend, with a peak in inspections in 2010. The second panel shows that the log of amounts fined declined from 2004 to 2015, with some increase in fines in 2009-2010.

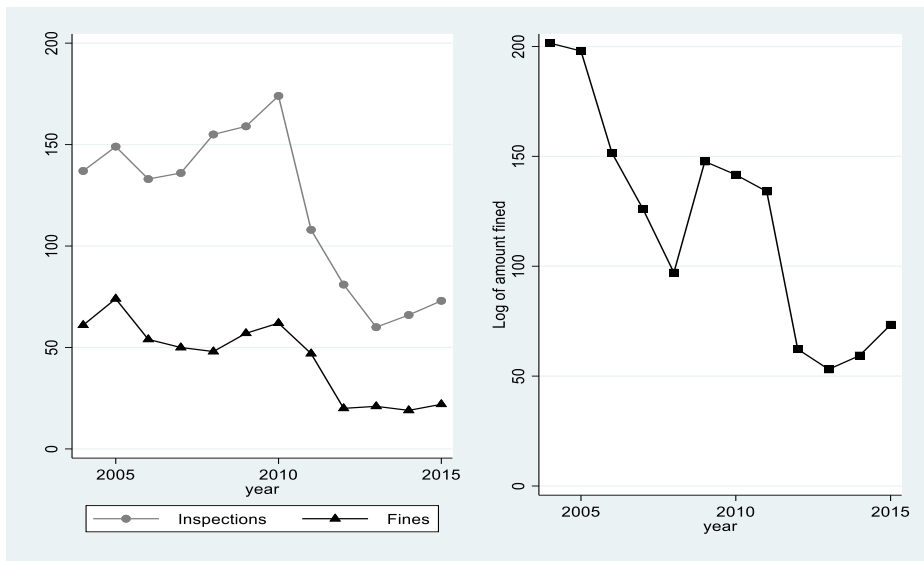


Figure A2. Trends in the total number of toxics inspections, fines imposed, and log of amounts fined, over 2004-2015.

Figure A3 presents the statewide distribution of regulatory activities under non-toxics (all other programs) inspections, fines, and the log of amounts fined in real US\$. The total number of inspections and fines was highest in Distrito Federal (Mexico City), Nuevo Leon, Queretaro, Jalisco, and State of Mexico (Mexico in the bar chart). The second panel shows that the log of amounts fined under all other (non-toxics) inspections was highest in Distrito Federal (Mexico City), State of Mexico (Mexico in the bar chart), Nuevo Leon, Jalisco, and Queretaro.

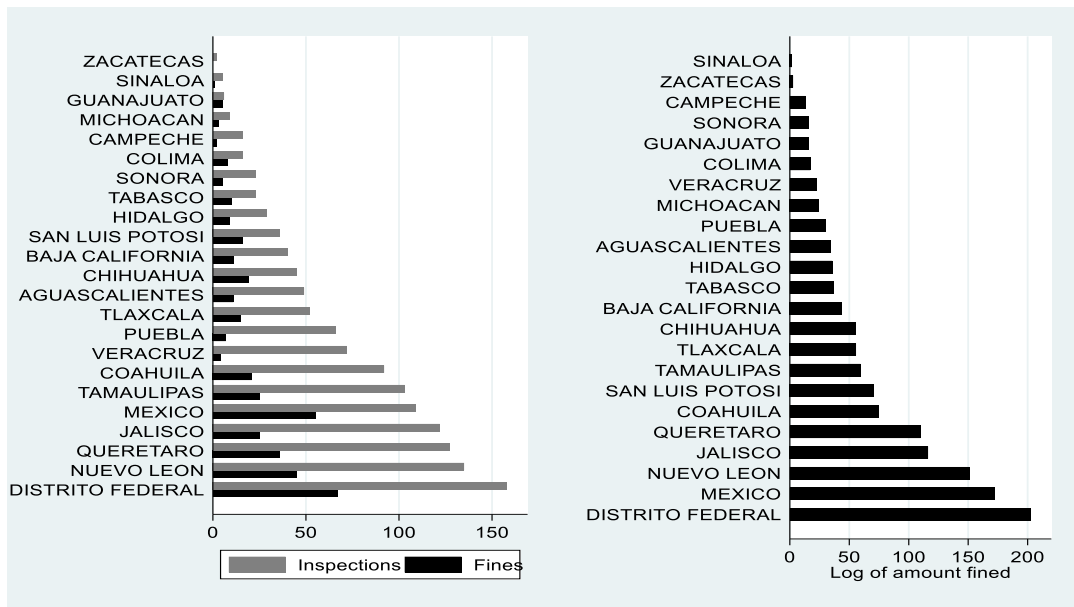


Figure A3. Distribution of the total number of non-toxic inspections, fines imposed, and log of amount fined by states, 2004-2015.

Figure A4 presents trends in the annual data for the total number of non-toxic inspections, fines imposed, and the log of amounts fined. The total number of non-toxic inspections was on a slight upward trend. The total number of fines imposed under non-toxic programs and the sum of the log of amounts fined (second panel) do not exhibit a significant trend from 2004.

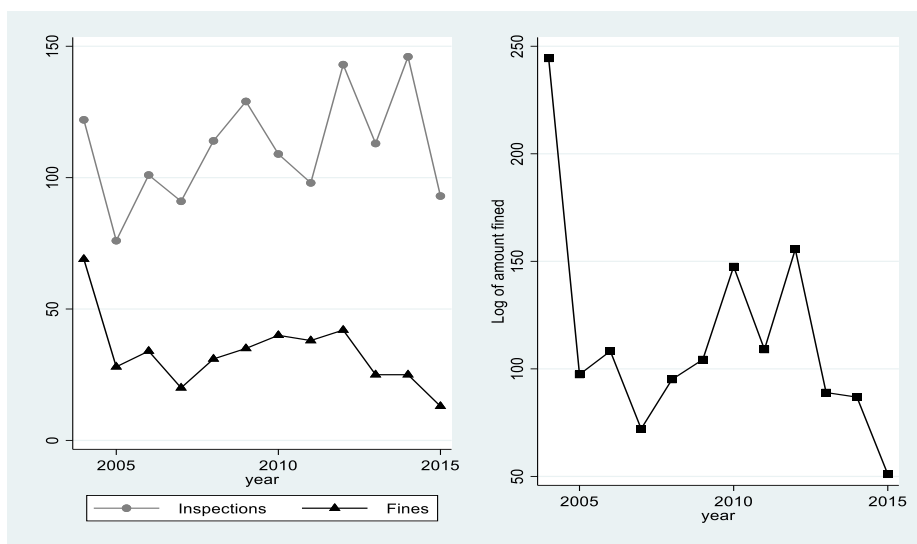


Figure A4. Trends in the total number of non-toxic inspections, fines imposed, and log of amount fined, over 2004-2015.

Table A1 presents summary statistics for all non-toxics programs. A plant was inspected 0.03 times annually under all non-toxics inspection programs. On average, a plant only faced a financial penalty 0.01 times in a year under all non-toxics inspection programs. Of the amounts fined, on average, a plant faced a penalty of US\$195 under all other non-toxics programs. In the past two years, a plant was likely to be inspected 0.06 times and fined 0.02 times with an average fine of US\$210 where fines were imposed. In the past two years, inspections, fines, and amounts fined faced by other plants in the same municipality was 3.6 times, 1.5 times, and the average fined amount was US\$426 where fines were imposed.

Table A1. Summary statistics for non-toxics regulatory activities

Variables	Obs.	Mean	Std. Dev.	Max.
<u>INSPECTIONS, NON-TOXICS</u>				
Annual inspections of plant (#)	41,232	0.03	0.18	1.00
Past 2 yr. inspections of plant (#)	41,232	0.06	0.27	2.00
Past 2 yr. inspections of others (#)	41,232	3.58	12.40	90.00
<u>FINES IMPOSED, NON-TOXICS</u>				
Annual fines for plant (#)	41,232	0.01	0.10	1.00
Past 2 yr. fines for plant (#)	41,232	0.02	0.16	2.00
Past 2 yr. fines for others (#)	41,232	1.49	6.16	45.00
<u>AMOUNT FINED, NON-TOXICS</u>				
Annual fines for plant (2010 US\$)	41,232	2.08	160.32	22789.46
Annual fines for plant, given fines>0	439	194.89	1543.33	22789.46
Past 2 yr. fines for plant (2010 US\$)	41,232	4.14	247.30	28294.75
Past 2 yr. fines for plant, given fines>0	813	210.16	1749.80	28294.75
Past 2 yr. fines for others (2010 US\$)	41,232	133.85	1498.87	28294.75
Past 2 yr. fines for others, given fines>0	12,945	426.34	2651.70	28294.75

Note: The summary statistics are for 3,436 facilities across Mexico.