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Controlling Pollution with Fixed Inspection Capacity

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Abstract:

In this paper I model the optimal monitoring and enforcement strategy when inspection capacity is fixed by budget or manpower constraints. I adopt a leverage enforcement structure that classifies firms into two groups with different enforcement intensities. Optimal monitoring and enforcement requires effective allocation of the fixed number of inspections to the two groups. In each period, a fixed number of firms are selected from each group for inspection, and those with the highest emissions are placed in the targeted group in which the inspection probability is higher. This transition structure induces rank-order tournaments among inspected firms. Once selected for inspection, the emissions of each firm are subject to a standard above which the firm pays a fixed penalty. I find that a regulator facing inspection capacity constraints should leverage the limited inspections by allocating more inspections to the targeted group. In addition, I show that targeting enforcement is generally superior to static enforcement. This is in accordance with findings in the literature. These results are consistent over different ranges of regulatory parameters.