

Economics Seminar, Indian Statistical Institute, New Delhi.

SPEAKER: Sushama Murthy, University of Warwick

TITLE: On modeling pollution-generating technologies

TIME: 3:30-4:30 PM

DAY & DATE: Tuesday, 27th July 2010

PLACE: Seminar Room 2

Abstract:

We distinguish between intended production (of "goods") and residual generation (of "bads") and introduce the concept of by-production. We show that by-production provides the fundamental explanation for the commonly observed (or assumed) positive correlation between intended production and residual generation. Most of the existing literature attributes the observed positive correlation to abatement options available to firms. We show that abatement options of firms add to the phenomenon of by-production in strengthening the this positive correlation. The existing literature usually does not explicitly model abatement options of firms, but considers a reduced form of the technology that satisfies standard disposability assumptions with respect to all inputs and intended outputs. We show that more than one implicit production relation is needed to capture all the technological trade off is that are implied by by-production. From our model, we are able to derive a reduced form of the technology that is in the spirit of the one that is usually studied in the literature. We find, however, that our reduced form technology violates standard disposability assumptions with respect to inputs and intended outputs that cause pollution. We derive implications from the phenomenon of by-production for econometric and Data Envelopment Analysis (DEA) specifications of pollution-generating technologies. We derive a DEA specification of technologies that satisfy by-production and employ it to measure technical efficiency of firms.

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