A VECTOR MONOTONICITY ASSUMPTION FOR MULTIPLE INSTRUMENTS

ABSTRACT

When a researcher combines multiple instrumental variables for a single binary treatment, the monotonicity assumption of the local average treatment effects (LATE) framework can become restrictive: it requires that all units share a common direction of response even when separate instruments are shifted in opposing directions. What I call vector monotonicity , by contrast, simply assumes treatment uptake to be monotonic in all instruments. I characterize the class of causal parameters that are point identified under vector monotonicity, when the instruments are binary. This class includes, for example, the average treatment effect among units that are in any way responsive to the collection of instruments, or those that are responsive to a given subset of them. The identification results are constructive and yield a simple estimator for the identified treatment effect parameters. An empirical application revisits the labor market returns to college.

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2	**2.49**