

Module 6

Lecture 39

Topic

6.3 Recent Developments in Empirical Economics

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- Empirical economics (specially micro econometrics) has undergone some radical changes since 1980s.
- It came from Leamer's critique of the then existing methodology of empirical economics.
- Leamer diagnosed that contemporary empirical economics is suffering from the lack of robustness.
- Early remedies suggested by Leamer mainly consisted of sensitivity analysis -- changing basic model specifications to find the extreme bounds of the results.
- The changes however took a different direction. Rather than going for sophisticated specifications micro-econometrics embraced the strategy of deploying improved research design.
- The origin of these paradigmatic shifts in micro econometrics can be traced back to some papers published in mid 1980s.
- Early influences, among other, include Lalonde (1986) and Solon (1985).
- Lalonde compared econometric evaluation of the National Supported Work demonstration with those from a randomized trial and argued that specification testing is not the right way to go about it.
- This view was supported by two contemporary papers foreshadowed Lalonde's paper: Ashenfelter (1978) and Ashenfelter and Curd (1985)

- Younger empiricists started turning increasingly to quasi-experimental studies often exploiting variation across U.S. states to find a causal relationship in the fields of labor and public finance.
- An early example is Solon (1985) who estimated the effects of unemployment insurance on the duration of unemployment spells. He compared the change in job finding rates in states that had tightened eligibility criteria for unemployment insurance with those states who had not changed their rules. Grueber (1994), Angrist (1990), and Angrist and Krueger (1991) applied the similar research design in different contexts.
- Till then credible research design remained at the heart of the developments especially in micro-econometrics.
- A typical empirical work before the credibility revolution in empirical economics would lack an explanation on the issue of endogeneity. Elrich's controversial paper on the effect of capital punishment on crime in 1985 or the Coleman report in 1966 had some obvious endogeneity bias which no one paid attention to at that time.
- Today's econometrics is better than it was in 1980s mainly because of two reasons: better data and better research design.
- By the end of 1980s it was becoming clearer to the researchers that in order to establish a causal link data should ideally come from a randomized trial.
- Hence, researchers started to arrange for randomized experiments whenever that is feasible and look for natural experiments whenever that is not available.
- Three driving forces for contemporary empirical economics are randomized experiments, natural experiments and quasi experiments.
- The basic principle of conducting experiments is quite simple: divide the sample in treatment and control groups, and then assign a particular policy instrument to the treatment group. Then examine whether the treatment group is doing any different than the control after receiving the treatment effect.
- This is same as medicine trials -- the only challenge in such a study is to make the treatment and control group more or less similar by their inherent

characteristics so that the difference, if any, noted after administering the treatment can be attributed to the treatment effect only.

- This can be done if the treatment is randomly assigned. Random assignment of treatment is relatively easier for medical trials than for economic policy choices. For example, suppose one wants to know the effect on NREGA on poor's health status. However, enrollment into NREGA cannot be random -- there will be problem of selection.
- For example, people with bad health may not register for work. Hence, even if we see that NREGA improves health condition by comparing the health condition of NREGA workers and non-NREGA population the comparison would be inherently awed.
- This comes from our inability to randomly assign beneficiaries for different government projects which makes the randomized experiments ineffective in evaluating several government projects.
- This brings forth two other strategies for designing experiments: natural experiment and quasi-experiment.
- A natural experiment refers to a situation where a natural event which is well beyond the control of the society creates a control and a treatment group. Because the problem of self selection is avoided if the treatment is assigned by nature in a random fashion.
- Such a natural assignment is used by Hoxby (2000). She tests whether students in smaller class perform better. The problem by doing with any class is that parents may select smaller class for their kids if they believe that it will improve their performance.
- Hoxby exploits the randomness of population which leads to different classroom size for different cohorts because the number of classrooms per grade is an integer.
- Another example of natural experiment is Card's study on Mariel boat lift (Card 1990) from Cuba to Florida to study the impact of immigration of labor force.
- Solon's study that we mentioned earlier (Solon 1985) is an example of quasi-experimental study.

- The econometric methods that appear most prominently in quasi experimental econometric studies are instrumental variables, regression discontinuity methods and difference in difference policy analysis.
- These methods some way or the other take care of possible omitted variable and other endogeneity biases.
- One example of exploiting regression discontinuity (RD) can be found in Angrist and Lavy (1999)
- The Angrist-Lavy research design is based on the fact that class size in Israel is capped at 40, so a cohort of 41 is split into two small classes, while a cohort of 39 is left in a single large class.
- Using this fact they ran comparisons between schools with enrollment just below and above 40, 80 and 120.
- The schools with above and below these cut-o_ are similar in terms of other characteristics.
- As school enrollment increases, a regression of academic achievement on class size must show discontinuities at the break points.
- This design is known as “fuzzy” regression discontinuity designs.
- The fuzziness comes from the fact that class size is not a deterministic function of the kinks or discontinuities in the enrollment functions.
- In case of RD, the key assumption for identification is that the individuals are similar on either side of the discontinuity.
- The other important strategy for empirical economics is difference in difference (DD).
- It looks at the before and after outcome for both the treatment and control groups and estimates if the before-after differences are different for the treatment and control groups. If yes then the treatment can be said to be effective. This strategy takes care of any other factors which may be affecting both the treatment and control group alike.

- One important example is Donahue and Wolfers (2005) who, using that strategy, showed that Elhrich's finding (that death penalty has a negative impact on crime rate) cannot not be sustained.
- Elhrich found that in the US states, where capital punishment was temporarily suspended, shows an upward trend in crime during that time period. This negative relationship between capital punishment and crime was found to be statistically significant. From this result they found that capital punishment is effective in deterring crime.
- Donahue and Wolfers countered this argument using the D-n-D strategy. They compared Canada and the U.S. as the control and treatment group respectively taking capital punishment as the treatment. They showed that crime rate declined in both Canada (where death penalty was not implemented) and the U.S. (where death penalty was reintroduced) and there is no significant difference between the difference in crime rate before and after the timing of legislation. Hence, they concluded that something was going on in North America which was across the board and had nothing to do with death penalty.