

# Using a Lottery as a 'Natural Scientific Experiment':

## Does choice work?

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There has been a plethora of books which popularise economics and the economists who write them. Perhaps the most conspicuous is *Freakonomics* by Levitt & Dubner. What is surprising, to me at any rate, is not the conclusions they draw but the fact that these esteemed economists have largely relied on *statistical* analysis, the tools of *our* trade to establish their results. In the same spirit of inter-disciplinary plagiarism, I would like to examine one of the most fundamental beliefs of economists, and see whether it stands up to the rigour of statistical analysis. Advocates of free-market economics hold firm to the belief that customers who are free to choose any supplier will automatically drive up the quality of the goods on offer as well as holding down prices.

Looking at a particular example, namely school choice, where parents have an opportunity to choose which school their child attends, we can ask: Does it *really* work in raising school performance? Normally, as with most social policy, this can never be tested *scientifically*, just subjected to endless arguments with claims and counter-claims.

But it was the allocation of school places by lottery which provided an opportunity put this idea to the test in the only way that we can trust. Allocating students randomly to different schools should never be part of a deliberate experiment just to test the 'choice' theory; rather it is the fortuitous intrusion of lottery allocation that has allowed what is claimed to be a 'natural scientific experiment'.

In Chicago the school board operates a parental choice scheme, with a lottery used in cases where more parents choose a given school than places (seats in US jargon) available. This scheme was investigated by Cullen, Jacob & Levitt (yes, the very same Levitt of *Freakonomics* fame). Previous U.S. studies on the use of school-vouchers appeared to show that 'choice works', that levels of attainment are raised by this policy. But Levitt & Co reject these studies as lacking scientific rigour – they did not amount to a proper experiment. Instead they chose to examine what happened in Chicago.

First they had to establish that lottery-allocation in Chicago really did amount to a proper scientific experiment, that the 'subjects' really were distributed randomly. Having satisfied themselves that it did (details are given in the paper referred to below) they then went on to test what is claimed to be central ambition of allowing and encouraging parental choice of schools – raising school standards.

They were “surprised” to find that there was little evidence that winning a place at a sought-after school provided any benefit. There was no benefit in improved test scores. Attendance rates, course-taking, and credit accumulation were not improved either. What surprised them was this result came about despite the fact that the students who had won in this lottery had attended schools which were better in almost every dimension. These chosen schools had higher peer achievement levels, higher peer graduation rates, and lower levels of poverty.

Here’s what they concluded: “If the primary goal is to improve measures of academic achievement and attainment, then it does not appear that this mechanism (choice) is effective. The findings are consistent with an even stronger conclusion that attending ‘better’ schools as measured by a variety of level measures of student performance does not systematically improve short-term academic outcomes”.

So the economists who claim that choice will improve educational standards, because economic theory says it should, are simply wrong, as the statistical analyses of the ‘natural experiments’ of school-place allocation by lottery have shown. There may be many other reasons, such as getting into a socially segregated school that will drive parents to seek out ‘better’ schools. But the incidental use a lottery for allocating students to schools in Chicago shows that parental choice cannot be expected to raise educational standards.

One might imagine that such a startling and counter-theoretical result would be just the sort of ‘freaky economics’ worth including in a book on the subject. However, this result does not appear in *Freakonomics* nor its follow-up *Superfreakonomics*. Perhaps it is simply too much for Chicago economists to admit that, using statistical analysis, and the mechanism of lottery allocation, statistics can show that their cherished belief that Choice will raise standards is a delusion.

Cullen, Julie Berry; Jacob, Brian A & Levitt, Steven (Nov 2003) The effect of school choice on student outcomes: Evidence from randomized lotteries. *NBER Working Paper 10113*

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Having taught Statistics and Economics for many years at Birmingham City University, Conall Boyle is now an independent researcher (or ‘retired’ if you prefer!). You can read all about lotteries to allocate places in schools, and universities in his recently published *Lotteries for Education: Origins, Experiences, Lessons* (Imprint Academic, Exeter).

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