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# Lessons from Private-School Vouchers in Colombia<sup>1</sup>

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Education vouchers are one of the most politically divisive issues in the United States. Debates over the constitutionality and potential effectiveness of vouchers have taken place at all levels and branches of government. In the United States, the underlying argument in favor of vouchers centers on the effectiveness of public education, particularly in poor, urban areas. Voucher proponents claim that poor, urban schools are failing, that private schools may provide a better education to their students, and that vouchers will increase competition between schools and subsequently raise performance in all schools. On the other hand, critics argue that vouchers can lead to additional funding problems in urban school districts and may siphon the best students away from public schools.

In contrast to the debates in the United States, discussions about vouchers in developing countries center on the supply of and access to primary and secondary education. In developing countries, private schools make up a much larger share of educational providers than in the United States. Additionally, the public infrastructure is often unable to meet the demand for public schools. Such was the case in Colombia in 1991.

In the early 1990s, secondary-school enrollment rates were extremely low for the poorest children in Colombia. Only 55 percent of eligible students actually attended secondary school. The gap in enrollment rates between the poorest and richest students in Colombia was almost 35 percent (Sanchez and Mendes 1995). At the same time, Colombia's public school system was at its capacity. The school day was only four hours long, and 98 percent of public schools hosted multiple sessions per day; 20 percent of schools hosted three sessions per day in the same building. Forecasts from the World Bank (1993) suggested that Colombia's public schools were not

prepared to handle the increase in enrollment that would occur over the next decade.

The voucher debate in Colombia was not about competition; it was about how to increase the capacity of the country to promote and manage additional enrollment. The central idea was to exploit excess capacity in private schools by allowing education vouchers for students enrolled in public schools. The resulting shift of students from public to private schools could create additional spaces in the public sector and potentially lead to an expansion of overall enrollment.

The program, entitled the Plan de Ampliación de Cobertura de la Educación Secundaria (PACES), began in 1991 and offered vouchers to students entering sixth grade, the start of Colombian secondary school. The vouchers were only available to the poorest of Colombia's population; applicants had to present evidence that they lived in a poor neighborhood.

Students were only eligible if they had been attending a public primary school, and they had to be accepted at a private school prior to their application. Elite private schools did not participate in the program, but studies have shown that the private schools that accepted the vouchers had similar pupil-teacher ratios, test scores, and access to technology (King, Rawlings, Gutierrez, Pardo, and Torres 1997). If students were selected to receive a voucher, they could renew it each year through graduation as long as they did not repeat a grade.

By 1997, PACES was one of the world's largest private-school voucher programs; over 125,000 vouchers had been awarded. While PACES was large relative to other voucher programs, it was small relative to Colombia's overall secondary school system. In 1995, approximately 3.1 million students

attended secondary schools in Colombia, with roughly 37 percent of students in private schools.

From the beginning, the demand for PACES vouchers far exceeded the supply. As a fair way to allocate vouchers when there was excess demand, the use of lotteries—one of the distinctive elements of PACES—was implemented. These lotteries created a laboratory with which to evaluate the effectiveness of the vouchers. Similar to a randomized trial in medicine, the voucher lottery created “control” and “treatment” groups. Students who applied to the voucher lottery and did not win formed an unbiased comparison group for students who did win, and comparing the academic and non-academic outcomes of students involved in the voucher lottery shows the effects of the voucher program.

There have been two major studies utilizing these voucher lotteries to measure the effects of PACES. The first study was conducted by Josh Angrist, Erik Bloom, Elizabeth King, Michael Kremer, and me (Angrist et al. 2002). Using survey data, we examined the effects the use of vouchers had after three years on students who had applied for the vouchers in Bogotá in 1995. As a longer-run follow-up to the first study, Josh Angrist, Michael Kremer, and I focused on high school graduation and college-entrance-exam data for these same students (Angrist et al. forthcoming). In the remainder of this paper, I review the evidence from these studies and discuss some of the lessons that the Colombia voucher program sheds on education in both developed and developing countries.

## EFFECTS AFTER THREE YEARS

For the first study, conducted in 1998 and 1999, we surveyed almost 3,000 students who had applied for PACES vouchers in selected cities throughout Colombia. Our survey included questions examining students’ education histories, their siblings’ subsequent education experiences, and students’ non-academic outcomes. Because of the randomness of the voucher, we only need to compare the average outcomes of voucher winners and voucher losers to learn about the impact of the program.

One of the most obvious outcomes of the program was its effect on private-school attendance. Because students had to be accepted at a private school prior to the voucher lottery, most applicants had a preference for private schooling. Among students who won the

voucher, 96 percent attended private school that year; among students who applied for and did not win the voucher, 90 percent attended private school the next year regardless. While lottery winners stayed in private schools, applicants who did not win began leaving private schools in grades seven and eight. By the time of our survey (eighth grade), only 54 percent of voucher lottery losers were in private schools, compared to 70 percent of lottery winners.

One of the program’s interesting effects on attendance patterns occurred among students who had applied to vocational private schools prior to the voucher lottery. These students who did not win a voucher behaved quite differently than students who did. Voucher lottery winners attended the vocational schools to which they had applied; lottery losers, by contrast, transferred to academic schools. If one measures school quality by the educational outcomes of its students, vocational-voucher lottery losers attended *better* schools than the vocational-voucher lottery winners.

We generally found that lottery winners had better educational outcomes than lottery losers. Although lottery winners only completed about one-tenth of a year more of school than lottery losers and were just as likely to drop out, one big difference did stand out: repetition rates. About one in five lottery losers had to repeat grades six or seven. Among voucher winners, only one in seven students repeated. The difference translates to a 25 percent reduction in repetition rates. In terms of test scores, voucher winners scored about one grade-level higher on standardized exams than voucher losers.

Another striking finding involved the program’s effects on non-academic outcomes. Colombia, like many developing countries, has a substantial number of youths working outside the home. Voucher lottery winners were less likely to be working outside the home and worked fewer hours on average than lottery losers. Given that there was virtually no difference in drop-out rates between these groups of students, this suggests that vouchers alleviated working commitments of voucher winners, potentially freeing up time that they could devote to their studies. Additionally, we tracked whether students were married or cohabitating with a significant other at the time of our survey (approximately age 15): Lottery winners were less likely than lottery losers to be involved in such a relationship.

And what of the voucher winners who attended vocational schools? They had less grade repetition, completed more years of schooling, and worked fewer hours outside the home than students who applied for the vocational voucher and did not win. Given that these voucher-winning students attended schools that appeared inferior academically, this finding may have some interesting implications for how the voucher program affected students.

## LONG-RUN EDUCATIONAL EFFECTS

In Colombia, 90 percent of graduating seniors take the college entrance exam. With the cooperation of the national testing office (ICFES), we were able to match applicants' records to their subsequent exams. As before, we only needed to compare the average outcome for lottery winners and losers to identify the effects of the vouchers.

Of the students who initially applied for the voucher, almost one-third eventually took the college entrance exam. Lottery winners were about 5 to 7 percentage points more likely than lottery losers to take the exam. The voucher hence increased their likelihood of taking the college entrance exam by about 20 percent.

Angrist et al. (forthcoming) also describe the effects of the voucher program on college-entrance-exam scores. (Differences in exam scores are harder to interpret because the voucher program induced many students to take the exam who would not have otherwise done so.) When we compare the raw scores, we find that lottery winners have higher language scores than lottery losers. Moreover, using a variety of econometric methods, we attempt to identify the effects the voucher program has on test scores of both average and high-achieving students who applied to the voucher lottery. We find that the program improves test scores at the mean as well as for the highest achievers (i.e., students over the 90<sup>th</sup> percentile).

Again, when we look at applicants who applied to vocational schools, we see that lottery winners had higher test scores and a greater likelihood of taking the college entrance exam than lottery losers. This is interesting, given that vocational-voucher winners were more likely than vocational-voucher losers to attend vocational schools, whose records for getting students to take the ICFES and whose students' subsequent performances on the exam are inferior to those of academic schools.

Voucher winners at vocational schools did well despite their less-academic surroundings.

## DISCUSSION AND CONCLUSION

The voucher program in Colombia proved to be very successful for students who were able to participate. Not only did their academic outcomes improve, but so did many of their non-academic outcomes. (Evidence in the United States has been less clear about the effect of voucher programs on students' success.) In the case of Colombia, the answer is unambiguous—voucher winners' outcomes improved relative to what they would have achieved in the absence of the voucher.

The voucher program also improved outcomes for students at vocational schools. Among students who applied to vocational schools prior to applying for the voucher, the program increased the likelihood of attending vocational schools. Yet these schools were inferior according to most academic standards. Why did these students do so well? Ongoing work by Bettinger, Kremer, and Saavedra (2005) investigates this. One potential explanation for the findings is the effect that the voucher program had on students' incentives; students lost the voucher if they did not pass a grade. The threat that the government would cancel a student's voucher may have been enough to persuade the student to work harder in school. A recent series of economic papers have focused on understanding the effects of incentives on students (e.g., Angrist and Lavy 2002; Kremer and Miguel 2004). Families and students respond to financial incentives, and these incentives may lead to better health and educational outcomes.

In 1998, Colombia dissolved the voucher program. A new administration did not see the program as central to its educational initiatives and, at the time, there was no measure of the effectiveness of the program; the first evidence of its effectiveness didn't come until 2002. As a result of the evidence on PACES, Colombia has renewed discussions with the World Bank about whether it should restart a voucher initiative.

The Colombia voucher program provides a valuable social lesson: A randomized experiment can influence education policy. In recent years, the United States government has emphasized the role of evaluation of randomized policy interventions. Randomization is the "gold standard" in evaluation. While other methodologies can provide hints of the effectiveness of a

policy, they generally cannot provide irrefutable evidence. Randomization, however, can provide definitive evidence when the randomization is conducted properly. In the case of the Colombian vouchers, randomization was used to assign the voucher to attain fairness: more people wanted the vouchers than there were vouchers available. Rather than assign vouchers based on previous performance, wealth, or other characteristics, randomization ensured that each applicant had an equal chance.

The definitiveness of the Colombian evidence has attracted the attention of policymakers and academics alike. It has shown that vouchers do improve outcomes for students. It has also demonstrated, and provided a model for, how policies can be implemented using randomization and how the resulting evaluations can provide definitive evidence of a program's efficacy.

## ENDNOTE

<sup>1</sup>This paper is largely based on "Vouchers for Private Schooling in Colombia: Evidence From a Randomized Natural Experiment" by Joshua D. Angrist, Eric Bettinger, Erik Bloom, Elizabeth King, and Michael Kremer (*American Economic Review* 2002) and "Long-Term Educational Consequences of Secondary School Vouchers: Evidence from Administrative Records in Colombia" by Joshua D. Angrist, Eric Bettinger, and Michael Kremer (*American Economic Review*, forthcoming).

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