Comments

Miguel Urquiola: Mizala and Romaguera present a thorough and useful review of empirical research on educational quality in Latin America, particularly as it relates to measurement and analysis using test scores. They ably distill the debate in this area into a few key issues, which is in itself an important contribution. In discussing so many different perspectives and results, however, the paper does not sufficiently emphasize a key point, namely, that as a result of empirical and theoretical difficulties, general knowledge on how to improve educational outcomes is, in fact, very weak, in the sense that it is insufficient to warrant the unambiguous policy prescriptions often observed in the literature.

My comments here illustrate this point for two of the central issues the authors address: the question of which inputs (like textbooks, teacher training, and class size) raise outcomes most cost effectively and the extent to which an expansion of the private sector would improve educational outcomes.

Educational Inputs

Economists would be well placed to influence educational policy if they could credibly identify which inputs are likely to raise educational outcomes most cost effectively. As discussed by the authors, the first difficulty in approaching this issue is empirical. Put briefly, the extent to which a child enjoys a given level of inputs (such as textbooks or small classes) is unlikely to be independent of other characteristics (including parental education) that also affect his or her achievement. This complication is severe because such correlations do not always go in the expected direction. For instance, in an earlier paper I consider class size, which is perhaps the most widely studied educational input, and find that in the case of Bolivia, children from lower socioeconomic levels are taught in smaller classes. Naïve interpretations of the data, like those that emerge from standard ordinary

least squares (OLS) regressions, suggest that increasing class sizes would raise achievement.[1] Because of such correlations, the literature is full of contradictory findings.

To make matters worse, such complications are not even purely empirical in nature. Lazear argues that one might actually expect that on the surface class size would be empirically unrelated to achievement.[2] This would happen, for instance, if the optimal class size is larger for better-behaved students, and schools take this into account in setting its level.

These considerations suggest that until further quasi-experimental work takes place in Latin America, there is little anyone can say with certainty on this issue. This may warrant a more skeptical reading than the authors give to existing results.

Expanding the Private Sector

To determine whether an expansion of the private sector should be a policy goal, it is key to ascertain whether private schools are indeed more effective than public institutions. In other words, all other things being equal, would a given student perform better in a private than in a public school? The same complications discussed above arise in empirically evaluating this issue: namely, students' own characteristics are not unrelated to their probability of enrolling in private school.

As above, the implication might be for further experimental or quasi-experimental research, such as Angrist and others carry out for Colombia.[3] The ideal situation would be to randomly select a group of students to transfer from the public to the private sector; if they performed better than those who remained behind, one might conclude that private schools are more effective. Unfortunately, here again the complications are not purely empirical. Hsieh and Urquiola suggest that even experimental work might not suffice, because an experiment does not guarantee that all other things are equal.[4] What an experiment does is raise the likelihood that the group of students transferred out of public schools is identical to those left behind. It is still true, however, that those who transferred would be

1. Urquiola (2000).
2. Lazear (2001).
3. Angrist and others (2001).
4. Hsieh and Urquiola (2001).

more likely to benefit from, say, better peer groups and better trained teachers (to the extent that, on average, private schools are better endowed with those inputs). These factors, rather than any difference in incentive structure or management styles, could account for any private advantage.

This point is important for policy because it raises the possibility that any private advantage found under experimental conditions might not persist if the private sector expanded by absorbing some of the public schools' inputs (such as poorly trained teachers or "bad" students). An experiment is well suited to answering the question of what would happen if a randomly selected student were transferred from a public to a private school, but it is not meant to answer the question of what would happen if the private sector underwent a significant expansion.

These considerations suggest that despite all their sophisticated controls, the evidence Mizala and Romaguera present in the case of Chile may not actually come close to determining whether it would be worthwhile for other countries in Latin America to implement voucher policies of the type Chile has pioneered. In short, even on two of the most analyzed issues in educational policy, economists are still far from the sort of knowledge that could reliably inform policy. Nevertheless, research like that of Mizala and Romaguera is an important contribution to this learning process.

Omar Arias: Mizala and Romaguera's paper discusses the factors that influence educational performance, usually proxied by test scores. In particular, they focus on the importance of educational quality and whether private provision is more effective than public education. The paper provides a fairly extensive and well-written review of the economics literature in this area, including the authors' most recent work for Chile. The topic is certainly relevant for Latin America and the Caribbean, and the paper should be very useful for both policymakers and researchers interested in assessing the impact of educational policy changes on equity and educational performance in the region.

The authors discuss the methodological difficulties faced by studies in this area. Three sets of issues receive special attention: the problems caused by omitted variables and self-selection with regard to isolating the impact of school input variables and private provision on scholastic performance; the existence of heterogeneous impacts; and general equilibrium effects. The first issue refers to the fact that students in schools with a better mix of teaching inputs and private management are more likely

to do well on tests owing to their higher socioeconomic level and other unobservable factors. Separating these intertwined effects has been difficult given the uncertainty surrounding the validity of the identifying assumptions implicit in econometric methods such as instrumental variables and selectivity-corrected regressions. The second point touches on the importance of empirically ascertaining the extent to which educational policies have a similar impact on all students. Finally, even well-designed studies that rely on social experiments, such as targeted educational voucher programs, fail to capture the impact of large-scale educational policy changes, such as a broad expansion of private education. They thus offer a poor guide for interventions on entire economies.

The paper presents empirical results for Chile that indicate a better educational performance of students in private schools relative to those in public schools, independent of the effect of measured school inputs and student socioeconomic characteristics. As the authors recognize, however, the robustness of these results is debatable given the methodological issues indicated above. The paper also presents novel results that highlight the potential heterogeneous impacts of educational policy changes, in particular the role of the interaction among students within an educational environment (the so-called peer group effect). The issues implicit in these results are central to the discussion of the equity impacts of educational reform in Latin America. I focus my comments on some of the questions raised for future research in this area.

Heterogeneous Treatment Effects

The empirical literature on the impact of school inputs on educational performance increasingly recognizes that such impacts cannot be well summarized by the average marginal effect obtained from ordinary regression analysis. In the language of impact evaluation, the response (that is, the change in educational achievement) to the treatment (the educational policy change) varies across students depending on their individual, family, and school characteristics, some of which are rarely measured (for example, ability, motivation, and spunk).

The paper employs three approaches to explore this issue with data from Chile: separate regressions by school type, hierarchical linear modeling (HLM), and quantile regression. The first two allow the average

effects of school and socioeconomic variables on achievement to vary across schools and families. Quantile regression estimates the effects for students at different points of the conditional achievement distribution and not only for the mean. Although, as the paper indicates, these approaches are complementary, quantile regression offers a more flexible and general approach to measuring heterogeneous impacts than random coefficient models such as school-specific regressions and HLM. Its practical disadvantage is that it does not pinpoint the specific sources of heterogeneity, compared with models of interactions between observable school and individual variables. However, overparameterization in the latter models may lead to nonrobust results. More important, such parametric models cannot account for the heterogeneity arising from the interaction between measured variables and unobservable factors such as individual cognitive ability, motivation, and unmeasured components of family background and school quality. A reasonable strategy for future empirical research is to use quantile estimation to measure and test for heterogeneity and then explore the extent to which the latter arises from key interactions between measured school and individual variables.

Documenting and further exploring the sources of unexplained heterogeneity can offer important insights for the design of educational policies. For example, the finding that reductions in class size may lead to an increase in average achievement is undoubtedly important for assessing the efficiency of policies to achieve this goal. Such policies could give rise to important equity implications, however, depending on who benefits the most from them. As the authors find for Chile, changes in class size that affect the ability composition of the student population may have an indirect effect on less-advantaged students. In particular, a reduction in class size that reduces the average number of low achievers in a class will have negative equity impacts, as these students will be made worse off. This point is not emphasized enough in the paper and deserves further exploration.

Peer Group Effects

The results of positive peer group effects on achievement are very interesting. The monotonic decline in the quantile coefficients of the two peer group variables is consistent with related work for other countries. As

one would expect, this means that schools with a higher percentage of similar students have a lower dispersion in educational achievement.

I have some concerns, however, about the interpretation of the paper's results. The two peer group variables are meant to capture the extent to which each particular student shares a similar socioeconomic background or scholastic achievement with the other students in the school. The variables are constructed as the percentage of students that lie "within the range defined by the mean plus or minus 0.5 standard deviation" (see footnote 75) in the distributions of socioeconomic status (SES) and achievement level, respectively. These measures pose at least two problems for interpreting the results. First, they are more closely measures of the dispersion in SES and achievement within a school and thus will only reasonably capture the peer groups of students close to the relevant averages. Second, better schools tend to be more homogeneous in terms of both SES and test scores. Consequently, the findings may be confounding any true peer group effect with a positive correlation between student achievement and unmeasured components of family background and educational quality that may be captured by the proposed peer group variables.

A more appropriate methodology would be to use individual-specific peer group measures, for example, by centering the measures used in the paper around each given individual's SES and achievement level (if possible within a given class) rather than around the school mean. These are less likely to be correlated with school homogeneity and would thus be less likely to lead to spurious results.

The new results of the paper raise some important questions for future research in Latin America. In particular, studies should explore the implications for the design of policies that simultaneously enhance the equity and effectiveness of the educational systems in the region.

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