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Routing

Markets vs. Monopolies in Education
A Global Review of the Evidence

by Andrew J. Coulson

Executive Summary

Would large-scale, free-market reforms improve educational outcomes for American children? That question cannot be answered by looking at domestic evidence alone. Though innumerable "school choice" programs have been implemented around the United States, none has created a truly free and competitive education marketplace. Existing programs are too small, too restriction laden, or both. To understand how genuine market forces affect school performance, we must cast a wider net, surveying education systems from all over the globe. The present paper undertakes such a review, assessing the results of 25 years of international research comparing market and government provision of education, and explaining why these international experiences are relevant to the United States.

In more than one hundred statistical comparisons covering eight different educational outcomes, the private sector outperforms the public sector in the overwhelming majority of cases. Moreover, that margin of superiority is greatest when the freest and most market-like private schools are compared to the least open and least competitive government systems (i.e., those resembling a typical U.S. public school system). Given the breadth, consistency, relevance, and decisiveness of this body of evidence, the implications for U.S. education policy are profound.

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There are ways of using the international evidence that not only overcome the hurdles posed by differences between countries but actually turn those differences into an asset.

Introduction

Would families and communities be better served by a free and competitive education marketplace than they are by our current system of state school monopolies? That question lies at the heart of the U.S. school choice debate, but the evidence presented to address it has typically been inadequate or even irrelevant. School systems that differ from free and competitive markets in crucial ways have been used routinely—and erroneously—to make claims about markets, while evidence of actual education markets operating in other nations has been ignored.

Economist John Merrifield recently observed that "the most intensely studied [school choice] programs lack most or all of the key elements of market systems, including profit, price change, market entry, and product differentiation—factors that are normally central to any discussion of market effects."[1] Despite their shortcomings, these programs are cited as examples of market education. "In essence," Merrifield concluded, "researchers have drawn conclusions about apples by studying lemons."

The present paper draws conclusions about education-market apples by studying the apples themselves, reviewing the relevant research conducted all over the world in the past 25 years. The paper begins by explaining the relevance of the international evidence, and then goes on to describe the methodology used to find and categorize studies of public school versus private school outcomes. The results of all these studies are then tabulated as a benchmark for discussion.

But that broad tabulation is insufficient to understand the relative performance of market and monopoly approaches to schooling. Much of the education research deals with private schools that lack crucial market features, and some of it deals with public schools that face real competition owing to the presence of large (if heavily regulated) school choice programs. So in order to compare genuine education markets to public school monopolies such as exist in the United States, it is necessary to narrow the criteria for the studies to be considered. To that end, a second tabulation of the research is presented that specifically compares the performance of market and monopoly school systems. The paper concludes by discussing the pattern that emerges from the international evidence and describing its policy implications.

The Relevance of the International Evidence

The U.S. education policy debate is parochial. Evidence from abroad is seldom mentioned in policy discussions, and when it is, its relevance is usually dismissed. The key objection to the consideration of foreign experiences is that nations differ substantially in factors related to educational outcomes (e.g., wealth, culture, demographics). It is therefore dubious, critics claim, to assume that the performance of students in any particular foreign nation is due to that nation's school system alone.

The critics have a point. Whenever a prominent set of international test results is released, it is common for attention to be lavished on whichever nation has scored highest in the given school grade and subject tested. Many in the media and education policy circles then call for the emulation of that top-scoring nation. As skeptics rightly observe, however, it is not possible to conclude that a particular nation's success on a single test is attributable entirely or even chiefly to its education system (let alone that its performance is equally high across grades and subjects).

Fortunately, there are ways of using the international evidence that not only overcome the hurdles posed by cultural and economic differences between countries but actually turn those differences into an asset. The most obvious way of eliminating the obfuscating effect of differences between nations is to compare different sorts of school systems within nations. A study that compares public and private schools within Sweden, or within India, for example, eliminates international differences as a factor.

Still, the results of such studies, taken indi-

vidually, can tell us only that one sector outperforms the other *in that particular nation*. But what if we repeat this sort of comparison scores of times in a dozen or more very different countries, and we find the same result occurring over and over again? If a particular approach to organizing and funding schools consistently outperforms other approaches across widely varying circumstances, we can be fairly confident that the observed pattern is the result of the system itself, and not simply an accident of circumstance—because, although the circumstances will have varied from place to place, the results will have remained the same. In fact, the greater the cultural and economic differences among the nations studied, the more striking any consistent pattern of results becomes.

The approach to the international data described above is a form of natural experimentation, a method used to great effect in fields as diverse as epidemiology and cosmology.[2] By applying it to the international research on private versus government provision of education, we can discover answers to questions that are difficult to explore empirically in any other way.

Methodology

The studies reviewed in this paper were collected over several years by a combination of Internet searches (chiefly via Google), multidatabase computer searches of academic journals, and examination of the sources cited in previously identified studies. The search strings used were extensive and varied, consisting of combinations of numerous synonyms for, and varieties of, "private schools," "public schools," and "outcomes."

Once identified, studies were included in this review if they used generally accepted quantitative methods to compare public versus private school performance in one or more of these areas:

- Academic achievement (as measured by student test scores)
- Efficiency (measured as academic achievement per dollar spent per pupil)
- Parental satisfaction
- Orderliness of classrooms
- Condition in which facilities were maintained
- Subsequent earnings of graduates (of K-12 academic programs)
- Attainment (graduation rates of high schools, or highest average grade completed)
- Effects on measured intelligence

Fifty-five studies, covering more than 20 nations, were found to meet the criteria laid out above. Some of these studies reported more than one statistical comparison of private and government schools, either because the research was conducted in several distinct locations, because several different types of private schools were examined, or because multiple distinct outcomes were measured. In these cases, each comparison, or "finding," is counted separately in the tabulations of results that follow. Each row in Table 1, below, records all of the findings for a given geographical area and for the type of schools reported in the specified study.

Academic achievement results for different grades or subjects are not counted as separate findings in the tabulations if they are from the same geographical area and for the same types of schools. Instead, academic achievement comparisons for different grades or subjects are combined into a single overall "academic achievement" finding for the given geographical location and school type.[3]

The results of alternative model specifications within a single study are not reported as separate findings. Instead, only the model preferred by the study's authors is reported. This is to avoid including findings from models that are deemed misspecified by their own authors, and also to avoid overweighting studies that report results for numerous slightly different model specifications applied to a single data set.

One of the most challenging issues for any literature review is the decision of whether or not to reject studies from consideration on

Fifty-five studies, covering more than 20 nations, were reviewed for this paper.

methodological grounds, and if so, what criteria to use. In principle, studies whose models are biased in the same direction as their results should be discounted, because the results may simply be artifacts of the erroneous model (e.g., a model biased in favor of private schools may show a private sector advantage when none in fact exists).

Difficulties arise, however, in the assessment of what constitutes a sufficient degree of model misspecification to warrant a study's exclusion. For example, I argued,[4] and others empirically demonstrated,[5] that the Braun, Jenkins, and Grigg study of U.S. public and private schools[6] suffered severe model misspecification, although other scholars accepted it without question.[7] If broad agreement could not be reached in a single seemingly straightforward case such as that, then agreement across 55 different studies is unlikely indeed. For that reason, the present literature review opts not to exclude any studies due to perceived methodological flaws, allowing readers to come to their own judgments regarding which studies, if any, should be dropped from consideration.

The inclusive approach adopted in the present review should not significantly skew its results so long as there is no major source of bias that would disproportionately favor one sector over the other. Some might argue, however, that there *is* a potential source of asymmetrical bias: so called "selection bias." Selection bias occurs when families choose public or private schools because of personal characteristics related to educational outcomes, and researchers fail to control for those characteristics. Some scholars contend that parents who choose to pay for private schooling must have greater interest in and expectations for their children's educational success, and that this could lead to higher achievement for their children no matter which type of school the children ultimately attend. But, if these presumably more motivated parents disproportionately choose private schools, then the private sector will enjoy an academic advantage that must be controlled for in order to make a fair comparison between the sectors.

There are two reasons why selection bias is unlikely to dramatically skew the results of this literature review: first, many of the studies reviewed here expressly control for selection bias; and second, the effect of controlling for selection bias is not uniform and in many cases private school advantages persist or even grow after the application of such controls.[8] A discussion of how selection bias was dealt with in many of the studies collected here, and the effect that controlling for it had on the results of those studies, can be found in an earlier literature review.[9]

Moreover, the distribution of research findings in this field is so stark that it is difficult to imagine any plausible source of error that could upset the currently prevailing pattern, as will become evident in the next section.

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Findings: Private Versus Government Schooling

Table 1 distills the international research findings comparing private and government provision of education across eight different measures:

- Ach Student academic achievement
- Eff Efficiency (achievement per dollar spent per pupil)
- Sat Parental satisfaction
- Ord Orderliness of classrooms
- Fac Physical condition in which facilities are maintained
- Ear Subsequent earnings of graduates (of K-12 academic programs)
- Att Attainment (graduation rates of high schools, or highest average grade completed)
- Int Effects on measured intelligence

For each of those measures, a value of 1 indicates a statistically significant advantage for private schools, a value of -1 indicates a statistically significant advantage for public schools, and a value of 0 indicates a statistically insignificant finding. Each finding is also categorized according to three contextual details:

PrF Parents directly pay, on average, a

third or more of the cost of the private schools under consideration

Aut The private schools under consideration have considerable or complete managerial autonomy (e.g., over pedagogy, staffing, etc.)

Mon The government schools under consideration are considered monopolies if they receive at least 30 percent more government funding per pupil than do most private schools

Findings for each of the above three details is coded as 1 if true or 0 if false, and findings for which these details are unknown are coded as blank cells in the table.

Each finding is also identified by the geographical location from which the data were collected and an abbreviated author/year citation. For complete citations, see the appendix.

Note that the results in Table 1 likely understate the private sector's efficiency advantage. In several cases (e.g., Peterson and Llaudet and the Dronkers and Roberts studies), private schools are found to have comparable or better academic achievement than government schools, but these studies do not report efficiency comparisons. Given that spending per pupil is generally higher in government than in private schools, the achievement findings in these studies strongly suggest an additional efficiency advantage for the private sector which is not reflected in the Table 1 results (equal or higher achievement at a lower per pupil cost is the definition of efficiency).[10]

Figure 1 and Table 2 summarize the Table 1

Table 1
Private vs. Government School Outcomes: The International Research Findings

Educational Outcomes								School Details			Study Details	
Ach	Eff	Sat	Ord	Fac	Ear	Att	Int	PrF	Aut	Mon	Location	Author(s) & Date
					1			1	1	1	USA	Aftab 2006
1	1							1	1	1	Pakistan	Alderman, Orazem & Paterno 2001
1								0	0	0	Chile	Anand, Mizala, Repetto 2006
1								1	1	1	Colombia	Angrist et al. 2002
1								0	0	0	Sweden	Ahlin 2004
1						1		0	1	1	Colombia	Barrera-Osori 2006
0	-1							1	0	1	India	Bashir 1997
1	1							0	0	1	India	Bashir 1997
					1					1	Indonesia	Bedi & Garg 2000
0								1	1	1	USA	Braun, Jenkins & Grigg 2006
1								1	1	0	Chile	Contreras 2002
1								0	0	0	Chile	Contreras 2002
1								1	1	0	Chile	Contreras, Elacqua & Salazar 2006
1								0	0	0	Chile	Contreras, Elacqua & Salazar 2006
-1								0	0	0	Chile	Contreras, Elacqua & Salazar 2006
				1				0	0	0	Chile	Cusato & Palafox 2002
		1	1	1				1	1	1	India	De et al. 1999
1								0			International	Dronkers & Robert 2003
-1								1			International	Dronkers & Robert 2003
1								0			International	Dronkers & Robert 2008
-1								1			International	Dronkers & Robert 2008
0							1	1	0	1	Germany	Dronkers, Baumert & Schwippert 2002

Continued on next page

Table 1—Continued

Educational Outcomes								School Details			Study Details	
Ach	Eff	Sat	Ord	Fac	Ear	Att	Int	PrF	Aut	Mon	Location	Author(s) & Date
					1			1	1	1	Vietnam	Glewwe & Patrinos 1999
1										1	India	Govinda & Varghese 1993
						1		0	1	1	Milwaukee	Greene 2004
		1						0	1	1	USA	Greene & Forster 2003
		1						0	1	1	Milwaukee	Greene et al. 1996
1								1	1	1	USA	Grogger & Neal 2000
0	1	1	1					0	1	1	USA	Howell & Peterson 2002
0								0	0	0	Chile	Hsieh & Urquiola 2003
	1							1	1	1	Indonesia	James et al. 1996
1	1							0	0	0	Netherlands	Levin 2002
1								1	1	1	Colombia	Jimenez & Lockheed 1995
1	1							1	0	1	Dominican Rep.	Jimenez & Lockheed 1995
1	-1							1	0	1	Dominican Rep.	Jimenez & Lockheed 1995
1	1							1	1	1	Philippines	Jimenez & Lockheed 1995
1	1							1	1	1	Tanzania	Jimenez & Lockheed 1995
1	1		1					0	1	1	Thailand	Jimenez & Lockheed 1995
1	1							1	1	1	India	Kingdon 1996
-1	1							0	0	1	India	Kingdon 1996
	1							1	1	1	India	Kingdon & Teal 2007
0								0	1	1	New York City	Krueger & Zhu 2004
-1								1	1	1	Tanzania	Lassibille et al. 1999
	1							1	1	1	Tanzania	Lassibille et al. 1999
0								1	1	0	Chile	McEwan 2002
1								0	0	0	Chile	McEwan 2002
0								0	0	0	Chile	McEwan 2002
1	-1							1	1	0	Chile	McEwan & Carnoy 2000
1	0							0	0	0	Chile	McEwan & Carnoy 2000
-1	1							0	0	0	Chile	McEwan & Carnoy 2000
1		1						0	1	1	Cleveland	Metcalf 1999
0								0	1	1	Cleveland	Metcalf 2003
1								1	1	1	Rural India	Muralidharan and Kremer 2006
						1		1	1	1	USA	Neal 1997
-1								1	1	1	Indonesia	Newhouse & Beegle 2005
1								1	1	1	USA	Peterson & Llaudet 2006
1	1							1	1	1	Colombia	Psacharopolous 1987
1	1							1	1	1	Tanzania	Psacharopolous 1987
1								0	1	1	Milwaukee	Rouse 1998
1								0	0	0	Chile	Sapelli & Vial 2001
1								1	1	0	Chile	Sapelli & Vial 2001
0	1							0	0	0	Chile	Sapelli & Vial 2002
1	1							0	0	0	Chile	Sapelli & Vial 2005
	1							1	1	1	Brazil	Sprietsma & Waltenberg 2005
1								0	0	0	Chile	Tokman 2001
-1								0	0	0	Chile	Tokman 2001
1	1							1	1	1	Hyderabad, India	Tooley & Dixon 2006

Educational Outcomes								School Details			Study Details	
Ach	Eff	Sat	Ord	Fac	Ear	Att	Int	PrF	Aut	Mon	Location	Author(s) & Date
1	1							1	1	1	Ga, Ghana	Tooley, Dixon & Amuah 2007
1	1							1	1	1	Lagos, Nigeria	Tooley, Dixon & Amuah 2007
1	1							1	1	1	Mahbubnagar, India	Tooley, Dixon & Amuah 2007
0											International	Vandenberghe & Robin 2003
1								1	1	0	Chile	Vegas 2002
1								0	0	0	Chile	Vegas 2002
0								0	0	0	Chile	Vegas 2002
						1		0	1	1	Milwaukee	Warren 2008
0		1						0	1	1	Milwaukee	Witte 1998
0		1						0	1	1	Washington, DC	Wolf et al. 2008
					0						Philippines	Yamauchi and Abrenica 2002
					1						Philippines	Yamauchi et al. 2002
					0					1	Thailand	Yamauchi et al. 2002

Figure 1
Private School vs. Government School Outcomes Number of Significant and Insignificant Findings, Worldwide

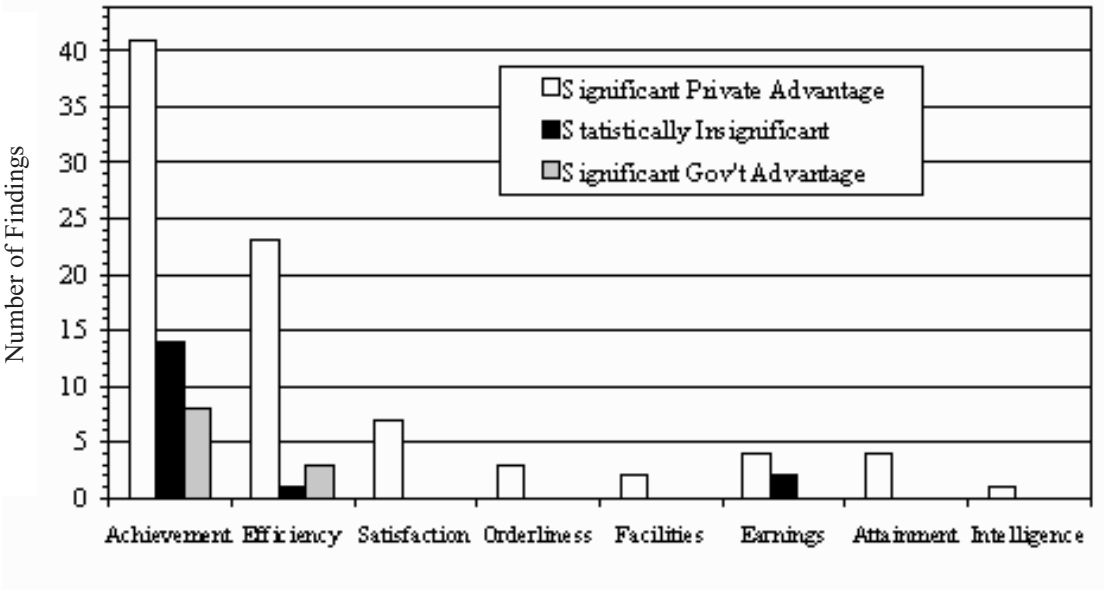

Table 2
Summary of Findings Comparing Private and Government Schooling, by Result and Outcome Category

	Total	Ach	Eff	Sat	Ord	Fac	Ear	Att	Int
Sig. Private Advantage	**85**	41	23	7	3	2	4	4	1
Statistically Insignificant	**17**	14	1	0	0	0	2	0	0
Sig. Gov't Advantage	**11**	8	3	0	0	0	0	0	0

Private schools clearly outperform state-run schools all over the world across a host of outcome measures.

results, showing the distribution of those favoring the private sector, those favoring the public sector, and those that are statistically insignificant.

Findings: Market vs. Monopoly Schooling

Although the results reported in the previous section have the advantage of comprehensiveness, they are not as meaningful as we would like. The terms "private school" and "government school" encompass many different types of institutions. Private schools in the United States are often quite minimally regulated by the state and are funded almost exclusively through fees paid by parents. Private schools in the Netherlands, by contrast, receive virtually all their funding from the state and must follow state rules regarding curriculum, testing, teacher qualifications, and teachers' salaries, and they may not be operated for profit. These are clearly different types of institutions. There are also great dissimilarities among the world's government schools. In the United States, these enjoy (with only a few minor and isolated exceptions) a monopoly on government K-12 education funding (to the tune of more than $11,000 per pupil).[11] In Chile, the Netherlands, Australia, parts of Canada, Sweden, and other nations, various levels of public funding are made available to private as well as government schools (though this funding usually comes with extensive regulatory strings), putting the government sector under some degree of competitive pressure.

So, in order to understand what the international evidence has to say about the relative merits of education markets as compared to the state-school monopolies that exist in the United States, we must winnow down the range of studies under consideration to only those that contrast market-like private education systems with monopolistic government systems. For the purposes of this paper, market education systems are defined as those that are funded at least in part by parents paying tuition fees, do not suffer strict price controls, and are free of intrusive regulation of their curricula, methods, and personnel decisions.[12] Note that this review is concerned with the level of private school regulation *actually enforced*, rather than with the theoretical regulatory burden expressed in law. That is because many developing countries have extensive regulatory codes for private schools but do not enforce those codes in practice. This distinction, where it is significant, is usually discussed in the studies themselves.

Note, too, that this is not the strictest definition of a free education marketplace (e.g., it disregards government-created barriers to entry into the private education sector), but it serves to identify relatively market-like education systems while not overly narrowing the scope of the empirical findings under consideration.[13]

Monopoly state systems are herein defined as those that do not face substantial competitive pressures from the private sector because they enjoy at least a 30 percent government funding advantage per pupil over most private schools. The majority of government school systems enjoy a funding advantage well above that threshold.

When the findings collected in Table 2 are winnowed down to only those comparing market to monopoly school systems (i.e., those for which the "PrF," "Aut," and "Mon" cells in Table 1 have the value "1"), the breakdown of results is as shown in Figure 2 and Table 3.

Discussion

The contrast between Tables 2 and 3 tells a new and compelling story. While private schools clearly outperform state-run schools all over the world across a host of outcome measures, this difference pales in comparison to that between relatively free education markets and state monopolies. While findings of a private-schooling advantage outnumber those of a public-schooling advantage by a ratio of nearly 8 to 1, findings of a free-market advantage outnumber those of a school–monopoly advantage by a ratio of more than *17 to 1*. And while there are 17 insignificant public-versus-

Figure 2
Market School vs. Monopoly School Outcomes Number of Significant and Insignificant Findings, Worldwide

Table 3
Summary of Findings Comparing Market and Monopoly Schooling, by Result and Outcome Category

	Total	Ach	Eff	Sat	Ord	Fac	Ear	Att
Significant Market Advantage	35	15	14	1	1	1	2	1
Statistically Insignificant	1	1	0	0	0	0	0	0
Significant Government Advantage	2	2	0	0	0	0	0	0

private findings, there is only a single insignificant market-versus-monopoly finding.

These findings, moreover, span some of the most diverse cultural and economic settings on Earth: from the United States to Colombia, from the urban slums of Hyderabad to the fishing villages of Ghana. The parents whose children benefit from market-like school systems range from some of the most privileged on the planet to some of the least literate and most destitute.

Contrary to the expectations of many conservative and liberal education commentators in the United States, there is little evidence that government regulation improves the operation of the marketplace. It is actually the freest, most market-like education systems that demonstrate the greatest margin of superiority over state schooling.

These findings present an opportunity and a challenge for U.S. education policymakers. The opportunity is obvious: it is clearly possible to structure the provision of schooling in ways that will greatly improve educational outcomes. The challenge is to find ways of doing so that will ensure all families have ready access to the marketplace without compromising key features of markets that are responsible for their superior performance: professional autonomy for educators, unfettered choice for parents, and some direct payment of tuition by parents.

The solution to that policy challenge lies in twin realizations: first, that the goal is not uni-

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Education markets work best when families pay directly for their children's education, so the ideal education policy is one that makes it easier for parents to assume that responsibility themselves.

versal participation in a particular government program but rather universal access to the education marketplace; and second, that while direct payment of tuition by parents is crucial, even partial parental co-payments can have a significant salutary effect. The first realization means that it is unnecessary and indeed undesirable to subsidize tuition for families who can already well afford it. Education markets work best when families pay directly for their own children's education, and so the ideal education policy is one that makes it easier for parents to assume that financial responsibility themselves.

The second realization comes from research showing that there is a diminishing return to the share of funding from parental fees.[14] Schools become more efficient as the share of funding that comes from parents grows larger, but the additional bang for each additional buck declines as parents' share of total funding approaches 100 percent. In other words, the expected improvement in school efficiency when parental fees go from zero percent to 10 percent of total cost is larger than when the fees rise from 90 to 100 percent. This means that even low-income parents can enjoy a significant improvement in school efficiency by directly contributing a modest amount toward their children's education.

A policy for accomplishing this delicate balancing act of ensuring universal access to an education marketplace that remains free and vigorously competitive has already been proposed by the Cato Institute: The Public Education Tax Credit Act. This legislation derives its name from the fact that it is designed to fulfill the goals and ideals of public education through a combination of tax credits. In essence, people who pay for the education of an eligible child, whether their own or someone else's, receive a dollar-for-dollar tax cut based on the amount they spend (up to a pre-set, per-child maximum). Hence, families who pay for their own children's education receive a tax cut, and individual and business taxpayers who pay for other children's education (whether directly or through donations to nonprofit scholarship funds) also see a dollar-for-dollar reduction in the taxes they owe. The total amount of any credits/scholarships for which a given child is eligible depends on his or her parents' income, ensuring that the program offers the greatest benefit to those who need it most. The scholarships offered by nonprofit organizations and funded through tax-credited donations ensure that even the lowest-income families can easily afford to choose between public and private schools.

Such a system, described in detail in a paper by Adam Schaeffer, ensures universal access to the education marketplace while impeding as little as possible the conditions required for its success.[15]

Conclusion

Across time, countries, and outcome measures, private provision of education outshines public provision according to the overwhelming majority of econometric studies. Findings of a statistically significant advantage for private schooling outnumber findings of a significant advantage for public schooling by a ratio of nearly 8 to 1, and the statistically significant advantage for private schools outnumbers by a ratio of 5 to 1 statistically insignificant findings.

However, since the funding and regulatory structures of "public" and "private" schools vary widely, this breakdown of the research is insufficiently detailed to be of real use to policymakers. If we want to ascertain the merits of real market reform in education, we must compare genuinely market-like private school systems (which are minimally regulated and are funded, at least in part, directly by parents) with state school monopolies protected from significant market competition (such as the typical U.S. public school system). When we assess the evidence using these more specific criteria, the results are more stark: *There are 35 statistically significant findings of market-like education systems outperforming government monopoly schooling, and only two findings of the reverse, for a ratio of more than 17 to 1 in favor of free education markets.* There is but a single statistically insignificant finding

among market versus monopoly comparisons, and every finding comparing the efficiency of market and monopoly schooling is both statistically significant and favors markets.

These results discredit the notion, prevalent in both conservative and liberal political circles, that the content of schooling must be overseen by the state in order for schools to achieve optimum performance. It is in fact the least regulated market school systems that show the greatest margin of superiority over state schooling.

In order to better serve families, policymakers should thus endeavor to provide universal access to minimally regulated education markets in which parents, whenever possible, directly pay at least some of the cost of their children's education. Education tax credit programs capable of accomplishing that objective have already been proposed elsewhere, and partial, scaled-down versions of such programs are already operating in several U.S. states.[16]

Appendix: Source Studies

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Notes

1. John Merrifield, "Dismal Science: The Shortcomings of U.S. School Choice Research and How to Address Them," Cato Institute Policy Analysis no. 616, April 16, 2008, p. 1.

2. Natural experimentation is far from a new concept. The pioneering work with this method was John Snow's discovery of the source of London's cholera epidemics of the mid-nineteenth century. See John Snow, *On the Mode of Communication of Cholera*, 2nd ed. (London: John Churchill, 1855). http://www.deltaomega.org/snowfin.pdf.

3. For simplicity, the combination of results for separate grades and subjects is accomplished as follows: A value of 1 is ascribed to any statistically significant result that favors private provision; a value of zero is ascribed to statistically insignificant results; and a value of -1 is ascribed to statistically significant results that favor government provision. These values are then summed, and a positive value is reported as an academic-achievement finding favoring the private sector, while a negative value is reported as favoring the public sector. It would be possible to combine the results more precisely by summing (computing, if necessary) the standardized effect sizes (i.e., the coefficients of interest minus their respective means and divided by their respective standard deviations), but this greater level of detail would not substantially affect the overall distribution of tabulated findings, and so it was forgone.

4. Andrew J. Coulson, "The School Choice Movement's Greatest Failure," blog post, Cato-at-Liberty, July 16, 2006, http://www.cato-at-liberty.org/2006/07/16/the-school-choice-movements-greatest-failure/.

5. Paul E. Peterson and Elena Llaudet, "On the Public-Private School Achievement Debate," publication no. PEPG 06-02 (Cambridge, MA: Program on Education Policy and Governance, Harvard University, 2006). Peterson and Llaudet empirically assessed the impact of many of the methodological flaws in the Braun, Jenkins and Grigg study cited in note 6 below. They found that the flaws in that study did indeed bias its results.

6. Henry Braun, Frank Jenkins, and Wendy Grigg, *Comparing Private Schools and Public Schools Using Hierarchical Linear Modeling*, NCES Publication 2006-461, National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education (Washington: Government Printing Office, 2006).

7. Raymond Pecheone and Ash Vasudeva, review of "Giving Students the Chaff: How to Find and Keep the Teachers We Need," document number EPSL-0610-217-EPRU, Education Policy Studies Laboratory, Arizona State University, October 25, 2006. http://epsl.asu.edu/epru/ttreviews/EPSL-0610-217-EPRU.pdf.

8. Examples of studies controlling for selection bias and finding that private sector advantages remain or even grow after doing so include the following (for full citations, see the appendix): Kingdon 1996 (India), Bedi and Garg 2000 (Indonesia), Jimenez and Lockwood 1995 (Colombia, Dominican Republic, the Philippines, Thailand, Tanzania), and Contreras 2002 (Chile).

9. Andrew J. Coulson, "How Markets Affect Quality: Testing a Theory of Market Education against the International Evidence," in *Educational Freedom in Urban America*, ed. David Salisbury and Casey Lartigue Jr. (Washington: Cato Institute, 2004), pp. 265–324.

10. For international evidence on this point, see the studies reporting efficiency results in the appendix. For a detailed investigation of spending in private and government schools in the U.S. state of Arizona, see Andrew J. Coulson, "Arizona Public and Private Schools: A Statistical Analysis," Goldwater Institute Policy Report no. 213, 2006. http://www.goldwaterinstitute.org/AboutUs/ArticleView.aspx?id=1149.

11. The U.S. Census Bureau reports that total per pupil spending in government schools was $11,098 in 2005/06, and with inflation and the historically rising trend in spending, the figure is likely close to $12,000 per pupil today.

12. Private schools were included in the market sector if approximately a third or more of their funding was derived directly from parents through tuition fees.

13. For a more thorough description of the requirements for free education markets, see Merrifield 2008.

14. Estelle James, Elizabeth M. King, and Ace Suryadi, "Finance, Management, and Costs of Public and Private Schools in Indonesia," *Economics of Education Review* 15, no. 4 (1996): 387–98.

15. Adam B. Schaeffer, "The Public Education Tax Credit," Cato Institute Policy Analysis no. 605, December 5, 2007.

16. Schaeffer.

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