School Choice:

The Three Essential Elements and Several Policy Options

CAROLINE M HOXBY

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PROFESSOR CAROLINE M HOXBY

Caroline M Hoxby is a professor of economics at Harvard University, a director of the Economics of Education Program at the National Bureau of Economic Research and a distinguished visiting fellow at the Hoover Institution.

Professor Hoxby's research covers a range of issues, including higher education tuition, competition in higher education, financial aid, public school finance, private school vouchers, charter schools and teacher pay. She regularly testifies for US state governments and the US federal government and has helped draft legislation on a number of these issues. She is a Presidential appointee to the National Board of Education Sciences.

Professor Hoxby is the editor of *The Economics of School Choice* and *College Choices: The Economics of Where to Go, When to Go, and How to Pay for It*. She has published widely and is the author of several influential papers on education policy, including 'Does Competition among Public Schools Benefit Students and Taxpayers?' and 'The Effects of Class Size and Composition on Student Achievement: New Evidence from Natural Population Variation'.

INTRODUCTION

This paper is entitled *School Choice: Three Essential Elements and Several Policy Options* and I think readers are due an explanation as to why, after more than a decade of research and policy action on school choice, I am still discussing its essential elements.

The idea of school choice comes from economics. It is not merely that an economist, Milton Friedman, is the author of the modern idea of school choice. Rather, the entire logic of school choice is based on economics, and the answer to every question on school choice draws on some part of economics – whether it be human capital theory, public finance, fiscal federalism, mechanism design or general equilibrium analysis.

Yet, it is a struggle to keep economics in the discussion of school choice. When I first started researching school choice more than a decade ago, the reason it was a struggle to keep economics in the discussion was that hardly any economists were participating. Books, papers and conferences were dominated by political scientists and sociologists and, even though some of them were admirers rather than detractors of economics, none drew upon economic logic with any real consistency. They would describe programmes as 'school choice' initiatives even when those programmes lacked all of the essentials that give school choice its economic logic.

At the same time, it was difficult to get researchers to recognise this as a problem because they were focused on the political and social aspects of these so-called school choice programmes, thereby neglecting incentives, constraints and other properties that are crucial to a programme's economic logic. Today, there are many economists working on school choice, so we have far more opportunity not only to participate in, but to direct, the discussion.

Nevertheless, even with numerous economists at work, the struggle to keep economics in the discussion of school choice has re-emerged. Why is this? Some empirical economists have become absorbed in doing almost pure programme evaluation, so that they evaluate programmes with the word 'choice' in them as though they were school choice programmes, without themselves noting that the policies have little or nothing to do with the economic idea of school choice. How can we economists fall into such error?

Well, most of the blame lies with us: after all, it is the duty of economists to use economics. The urge to do good programme evaluation, which I honour, does not obviate our duty to think like economists.

In the spirit of sharing the blame, however, we can assign some blame to political opponents of school choice, who deliberately confuse the issue by using the 'choice' nomenclature to describe programmes that have superficial similarities to, but that lack the essential elements of, school choice. We can even assign a little blame to the political proponents of school choice. Having for years dealt with opponents who spread confusion with sham school choice programmes, supporters of school choice have reacted by de-emphasising the abstract logic and inherent flexibility of the school choice idea and tend to describe basic, narrow programmes. While the programmes they describe do include the essential elements of school choice, their very narrowness does not encourage people to develop an understanding of what is essential in school choice and what are optional refinements.

It is important for people to know both what is essential (so that they are not surprised and disappointed when their 'choice' plan fails to produce the intended effects) and what are optional refinements that are fully compatible with school choice. The refinements can go a long way toward reassuring people who worry about the social risks of school choice.

First, I will describe the essential elements of school choice. By that, I mean the features a programme must have in order to tap into the powerful economic logic of school choice. Second, I will describe how school choice plans can be refined to deal with legitimate concerns about individual and social welfare. I will bring in evidence and examples from school choice programmes, mainly relying on US examples. I rely on US examples not because I prefer them or am misguided enough to think that the United States is ahead of countries like Sweden, the Netherlands or New Zealand in experimenting with choice policies. I rely on US evidence simply because I am more expert in it and because one of my key arguments is that it is important to understand a school choice programme well enough to describe the incentives it creates and the constraints it imposes. I am wary of analysing New Zealand's programmes in detail because, although I know of them from others' writing and research, my first-hand knowledge is limited.[1] Many of

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[1] LaRocque, Norman (2005) *School Choice: Lessons from New Zealand, Briefing Paper No 12*, Education Forum, Wellington, New Zealand, www.educationforum.org.nz; Harrison, Mark (2004) *Education Matters: Government, Markets and New Zealand Schools*, Education Forum, Wellington, New Zealand, www.educationforum.org.nz.

the conclusions of this paper, however, apply to New Zealand's programmes, and I will make the connections at several points.

SCHOOL CHOICE AS AN INTERVENTION

Before proceeding to the three essential elements of school choice, however, let us take a step back and consider the problem that we are trying to solve and, fundamentally, what school choice suggests is the solution.

Education is not consumption. It is an investment in human capital. Therefore, we do not have to appeal to notions of redistributing consumption to believe that the government has a legitimate role to play in education. We merely need to observe the fact that the capital market for financing education is highly imperfect, especially for children's education (since children have insufficient knowledge and judgement to commit themselves to, say, loans that they could use to finance their own education and pay back as adults). Indeed, the inability of children to make commitments is such a serious problem in the capital market for education investments that we do not even need to appeal to the other reasons why there is a partly missing market:

- parents are uncertain about the level of human capital investment appropriate for their children;
- human capital cannot be used as collateral (without slavery); and
- an individual's investment in human capital is undiversified and insuring people against risks leads to serious problems of moral hazard.

Internal dynasty financing (that is, where one generation borrows from the previous one) is the most common method of dealing with the missing capital market for financing education investments, but, obviously, internal family financing may work better for some than others. We need only consider the problem of a poor family with a very gifted child who could benefit from a world-class education to see that underinvestment could occur.

In short, there is clearly a role for government intervention in the financing of education investments. A simple way to think about school choice is that it is the claim that government intervention should be largely limited to remedying the financing problem. This simple way to think about school choice is useful but, truly, too simple. Once government funds are used for financing, the government has some interest in whether its funds are employed as intended. So, school choice is the claim that government's intervention should be limited to:

1 remedying the financing problem;

2 setting basic parameters so education providers cannot take rents from government funds; and
3 setting parameters so providers have to compete with one another on an even playing field.

(If providers must compete on an even playing field, they will find it hard to extract rents.) School choice is also the claim that the government should rely on its ability to set prices, not regulate quantities, to equilibrate supply and demand in a world where families demand schools flexibly and schools supply education elastically.

Summing up, the essence of school choice is a claim that if government intervenes mainly through setting prices and parameters, education investment will be more optimal than if it intervenes through quantity regulation or, more usually, straight government provision. School choice is a claim about the *form* of intervention, not a claim that education is best left to a laissez-faire market because, if they were interested in a laissez-faire situation, advocates of school choice would presumably not be interested in the use of tax dollars at all.

What is the basis for the claim that the limited intervention just described will lead to general equilibrium improvements in education better than, say, state provision of education? Economic theory suggests two channels through which general improvements could occur. The first is match quality. If students differ in regard to the pedagogical and management methods that are most conducive to their learning, then their investments will have a greater payoff if we allow them to choose among schools that practise a variety of teaching and educational methods. Match quality is, however, likely to be the less important channel for general equilibrium improvements. The more important channel is improvements in schools' productivity. This second channel can alternatively be described as improvements in 'x-efficiency' or reduction of rents. It amounts to an argument that, by encouraging competition among providers of education, school choice will expand the supply of education providers who use resources efficiently by guaranteeing them the right to expand if they can attract students. School choice is also intended to eliminate poor providers by denying them a captive audience. In other words, school choice is intended to expand schools that make useful pedagogical innovations, expand schools that manage their staff well, eliminate schools that employ ineffective curricula and so on.

I have deliberately emphasised the fact that economic theory suggests that school choice can generate *general* improvements in education investments.

What is meant by 'general'? If there were good schools and bad schools and their qualities were fixed, introducing school choice might reallocate quality among students (so that some students who previously experienced bad schools would experience good ones and vice versa), but there would be no source of *general* improvements.

Regardless of whether match quality or 'x-efficiency' is the more important channel, three elements are essential in a school choice programme if it is to produce *general* improvements, not merely a reallocation of quality among students. The three essential elements are:

1 supply flexibility;
2 money that follows students; and
3 independent management of schools.

ESSENTIAL ELEMENT 1: SUPPLY FLEXIBILITY

Let us first consider supply flexibility, by which I mean that schools must be able to open when there is demand for them, expand with demand, contract with demand and close. Logically, supply flexibility, or elasticity, is required if school choice is to produce gains through either the 'x-efficiency' or match quality channel. This may seem painfully obvious – indeed, it is basic economics. Yet, many governments think that they are supplying school choice when they set out a certain number of schools, each with a fixed number of places, and say that students have the right to choose among them. In such systems, oversubscribed schools do not grow but are rationed on the basis of priorities (such as the proximity to a student's home) or lotteries or some other device. Such systems cannot produce general equilibrium improvements in education because there is no reward or expansion for a successful school. An unsuccessful school fills its places; it is not penalised, it does not contract; it need not close.

Chicago, the third largest school district in the United States, with about 450,000 students, illustrates the point about supply flexibility. For several years, Chicago has had what is called a magnet school system. A student anywhere in Chicago, regardless of their attendance zone, may apply to attend a magnet school, and if a magnet school is oversubscribed, then students are admitted by lottery. Magnet schools do not expand or contract, and their enrolment levels and funding are fixed by the Chicago public school district. They are governed by the district and work within its overall management structure – for instance, they are restricted to managing staff according to Chicago's overall collective

bargaining agreement. Magnet schools are supposed to engage in educational innovation and offer some variety in pedagogy and curriculum. However, a magnet school system lacks the first essential of school choice: it does not have supply flexibility. (It will turn out that magnet schools also lack the other essentials, but let us focus on the first essential for the present.) The right-hand-side of Table 1 lists the qualities of magnet schools.

In the mid 1990s, the state in which Chicago is located (Illinois) enacted a charter school law and a system of charter schools has now grown up in Chicago. Charter schools are public schools, participate in state-wide testing, and receive public funds. Like magnet schools, they can admit students from anywhere in Chicago. Also, if they are oversubscribed, they hold lotteries among applicants. There, however, the similarities with magnet schools end. Charter schools are fee based: essentially, when a student enrols in a charter school, the student brings a fee that is government funded and equal to about 75 percent of what would be spent on their education if they remained in a regular Chicago public school. When oversubscribed, a charter school can submit an application to expand or open a new campus, and, in fact, successful charter schools have done just that in Chicago, greatly increasing their enrolment since their inception in the late 1990s. A charter school that does not attract applicants will contract mechanically and close quickly because of its fee basis – it simply will not have the funds to run a school at an efficient scale. Although a charter school must be authorised or 'chartered' by a government-appointed body initially and re-chartered every few years, its day-to-day management is independent. It answers to its own governing board and is not bound by the management structure of the Chicago Public Schools. Charter schools in Chicago, for instance, hire and manage staff according to their own contracts; they do not work within the Chicago collective bargaining agreement. Charter schools are also largely free to allocate their funds as they see fit. In practice, they have used this freedom to use technology in innovative ways, spend a large share of their budgets on teacher rewards, extend the school day and extend the school year. Since charter schools receive only 75 percent of what the regular public schools receive, they also need to be efficient with their funds.

Do Chicago charter schools improve education for students who attend them? In a recent study of Chicago charter schools, Jonah Rockoff and I have shown that the answer is yes.[2] For context, the charter schools we studied

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[2] Hoxby, Caroline M and Jonah E Rockoff (2005) *The Impact of Charter Schools on Student Achievement*, HIER Working Paper, Harvard University, Cambridge.

Table 1: Differences between charter and magnet schools in the United States

	Charter	Magnet
State sector	Yes	Yes
Applicants admitted by lottery	Yes	Yes
Subject-area focus?	Sometimes	Sometimes
Pedagogical/style focus?	Usually	Usually
Can open/grow?	Yes	No
Can contract/close?	Yes	No
Independent governing board	Yes	No

are located in inner-city neighbourhoods and serve children who are disadvantaged even relative to the average student in Chicago (who is disadvantaged relative to the typical US student). Applicants to the charter schools in the study were 74 percent Black, 22 percent Hispanic and 81 percent poor. Using longitudinal data, we compared charter school applicants who were randomly admitted (the 'lotteried-in') and who consequently attended charter schools with applicants who were randomly not admitted (the 'lotteried-out') and who consequently continued to attend Chicago's regular public schools. We were able to ascertain that the Chicago charter school lotteries were indeed fair. The lotteried-in and lotteried-out students were almost identical in terms of race, ethnicity, family income, home location, special education status, limited English proficiency, and prior achievement in the regular public schools (see Figure 1).

After following both groups of students, we found that, after two years, lotteried-in students who attended charter schools had mathematics and reading achievement that was about 6 percentile points higher than lotteried-out students who continued in regular public schools (see Figure 2). To put these gains in context, 6 percentile points is more than half of the difference in achievement between very disadvantaged students in the United States (like the ones served by the charter schools in the study) and typical students in the United States.[3]

Do magnet schools produce similar gains? The answer appears to be no. In a recent study, Julie Cullen, Brian Jacob and Steven Levitt compared students who were lotteried-in and lotteried-out of the magnet schools.[4] They found

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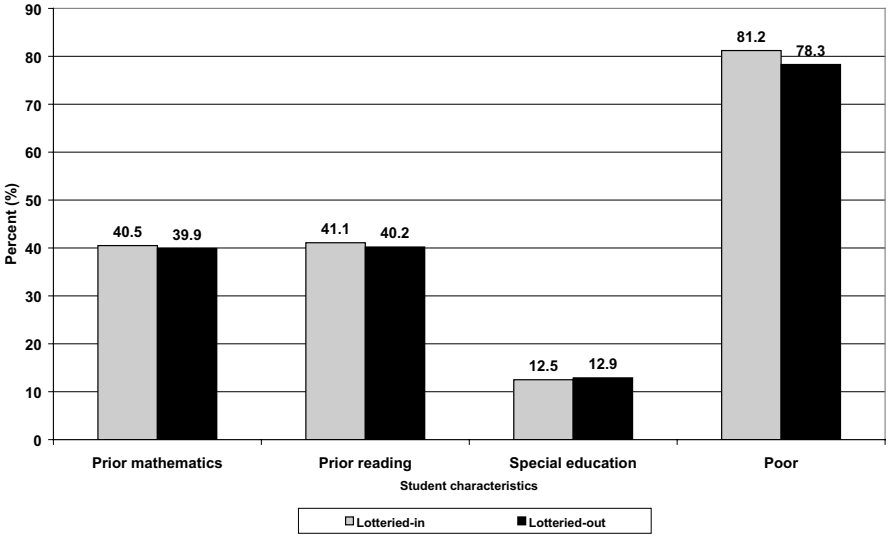
[3] Hoxby and Rockoff (2005), above n 2, p 33.

[4] Cullen, Julie Berry, Brian Jacob and Steven Levitt (2003) *The Effect of School Choice on Student Outcomes: Evidence from Randomized Lotteries,* Working Paper 10113, National Bureau of Economic Research, Cambridge.

Figure 1: Characteristics of applicants to Chicago charter schools, by lotteried-in and lotteried-out status

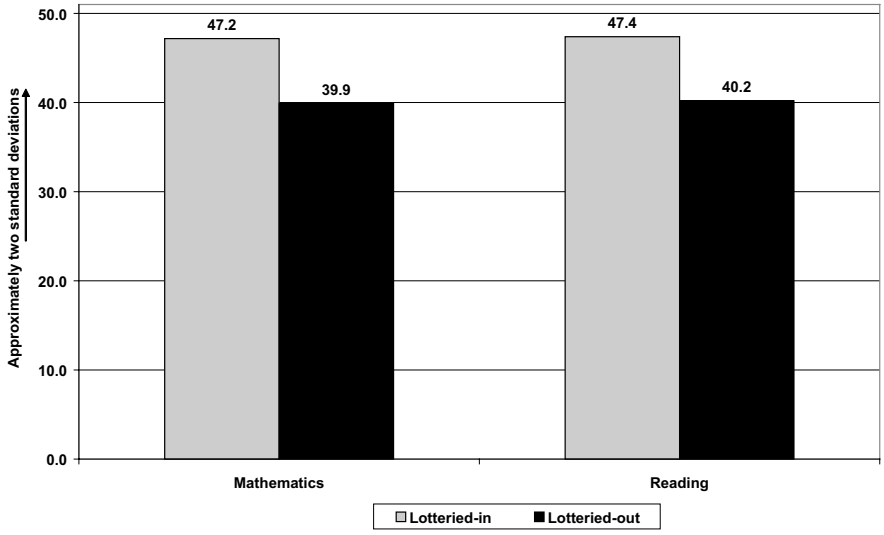


Source: Hoxby, Caroline M and Jonah E Rockoff (2005) *The Impact of Charter Schools on Student Achievement*, HIER Working Paper, Harvard University, Cambridge, p 10.

that students did just as well in the regular public schools as in the magnet schools. Now, when we think about the structure of magnet schools, this should come as no surprise: the schools do not qualify as a form of school choice because they lack its essential properties. Sadly, the authors of this study have created great confusion by *not* describing the magnet schools' structure clearly and by *not* distinguishing them from school choice. Indeed, they have done the opposite and described magnet schools as a classic form of school choice despite expressions of concern from fellow economists and despite the fact that many areas of the United States have had magnet schools for years without regarding them as a form of school choice.

How does this discussion of supply flexibility reflect on New Zealand? My understanding is that it is straightforward for a parent to choose a school outside their school zone *if* there is space at that school. However, it is also my understanding that an oversubscribed school has little incentive or even ability to expand, so that the population of schools is largely fixed. This means that the large amount of information generated by families' revealed preferences about schools is not delivering general equilibrium benefits.

Figure 2: Achievement of Chicago charter school students and their lotteried-out counterparts after two years



Source: Hoxby, Caroline M and Jonah E Rockoff (2005) *The Impact of Charter Schools on Student Achievement*, HIER Working Paper, Harvard University, Cambridge, p 33.

ESSENTIAL ELEMENT 2: MONEY MUST FOLLOW STUDENTS

The second essential element of school choice is that money must follow students. More precisely, the public funds that follow a student when the student exercises a choice must be such that a school with excess demand has the funds to expand and a school with excess supply is forced to contract. That is, the fee that follows a student must be approximately equal to the cost of educating that student. (The exact amount of the subsidy can be a policy option, as I discuss below, but for now, think of a basic subsidy equal to the cost of the student's education.) Of course, I do not mean that the subsidy needs to be such that a school could literally add one extra seat every time there was a demand for one. No school can afford to add a classroom to enrol one additional student, but when there is sufficient demand to add *full* classrooms or add a campus, the fee should be sufficient to make that possible.

Perhaps all of this seems obvious because supply flexibility will not occur if funds do not follow students. However, it is the *exceptional* plan rather than the typical plan that gets this right. A number of poorly designed school choice

plans in the United States allow only a small fraction (such as 25 or 30 percent) of a student's funding to follow the student when they choose an alternative public school. Indeed, this is a characteristic of the typical open enrolment plan in the United States.[5] As you might imagine, such plans quickly cease to function because no school wants to receive numerous students with inadequate funding. Moreover, many school choice plans in the United States do not take *any* funding away from the school or district that a student leaves when the student exercises choice. This creates a perverse incentive for schools to drive students away, as they can end up with the same funding and fewer students to serve. As we saw, even in the case of Chicago's charter schools, the regular public schools lose only 75 percent of their per-pupil funding when a child attends a charter school.[6] (That 75 percent appears to be sufficient for charter schools to operate and is probably sufficient to force some very modest contraction on the Chicago Public Schools.)

I would like to turn to Milwaukee, a large city in the midwestern United States with about 100,000 students, to illustrate the importance of money following students. Milwaukee also illustrates the importance of supply flexibility.

Milwaukee has the best known and most informative, from a research perspective, system of vouchers in the United States. The vouchers are publicly funded by the state of Wisconsin, in which Milwaukee is located, and only poor children in Milwaukee are eligible to receive them. The vouchers can be used to pay tuition at a private school, which must admit voucher applicants by lottery if it is oversubscribed. Milwaukee's programme began in 1990 but it initially was badly short on some essentials of school choice. The voucher amount was less than 40 percent of the per-pupil funding in Milwaukee's regular public schools and, what's more, when a child left the regular public schools using a voucher, the Milwaukee public schools lost no money at all. Instead, the state of Wisconsin paid for the voucher (strictly speaking, taxpayers all over the state paid, and Milwaukee represents only a small proportion of the income tax collected in the state because its citizens tend to have low incomes). In the middle of the 1997–98 school year, a court decision suddenly allowed Wisconsin's legislature more latitude in the structure of

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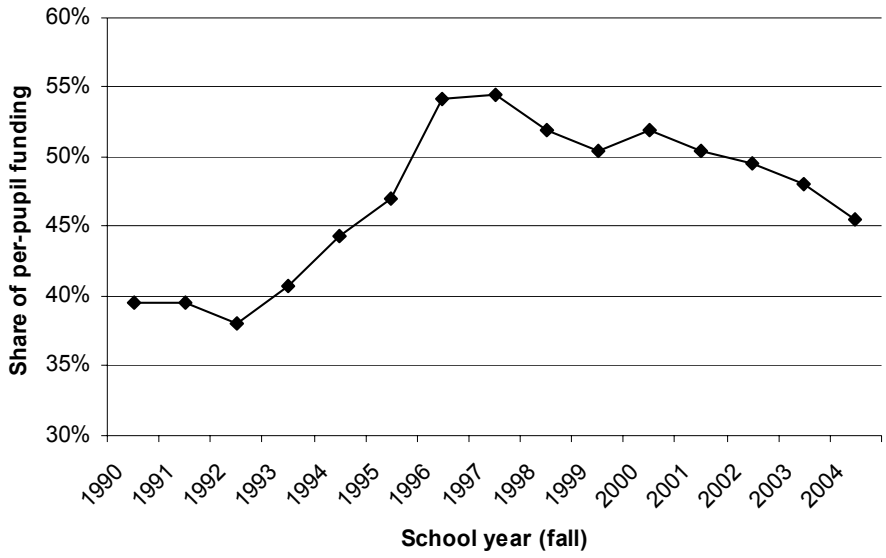
5 See, for example, Armor, David and Brett M Peiser (1997) *Competition in Education: A Case Study of Interdistrict Choice*, Pioneer Paper No 12, Pioneer Institute for Public Policy Research, Boston. This study of the Massachusetts open enrolment plan showed it was largely non-functional.

6 Hoxby and Rockoff (2005), above n 2, p 7.

the voucher programme, and the voucher amount was raised to 55 percent of the per-pupil funding in Milwaukee public schools. At the same time, Milwaukee began to lose some money (about 25 percent of its per-pupil funding) every time a student used a voucher. You will notice that funding parity has slowly declined since 1998; it is now only 45 percent (see Figure 3).

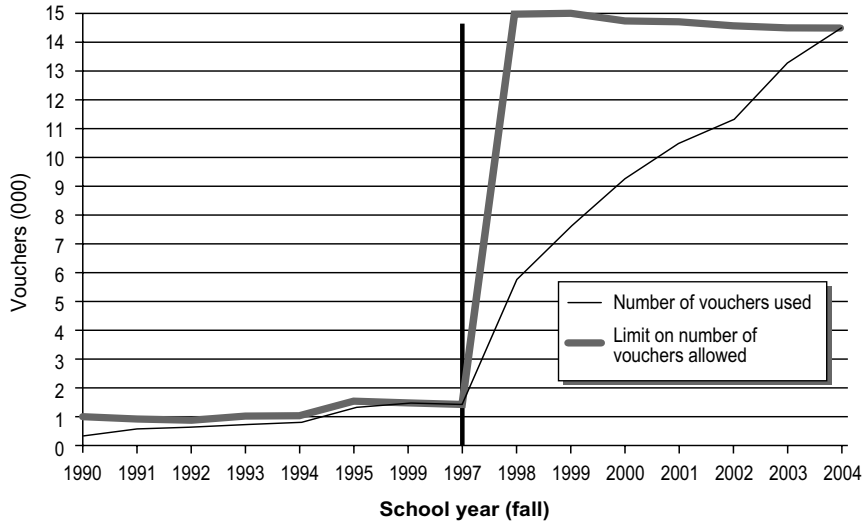
With the same court decision, the voucher system went from having inflexible supply to flexible supply. Initially, the number of vouchers had been capped at just 1 percent of Milwaukee's student population, and the number of voucher takers hit this cap quickly. Obviously, there was no way for a successful voucher-taking school to expand and no need for the Milwaukee public school to compete to keep its students, since they could not leave. In 1998, the cap on enrolment was lifted to 15 percent of the Milwaukee school population, and you can see from Figure 4 that for about four years, the cap became meaningless and the real restriction on voucher use was that, given the relatively small voucher amount, private schools had a hard time expanding fast enough to meet demand.

Figure 3: Voucher as a share of per-pupil funding in Milwaukee public schools, 1990–2004



Source: Author's calculations based on numbers derived from Milwaukee Parental Choice Program (MPCP), MPCP Facts and Figures 1998–99 to 2004–05; MPCP Program History (electronic spreadsheet); and the Milwaukee Public Schools enrolment and finance files (electronic spreadsheets), http://dpi.wi.gov/ and http://dpi.wi.gov/sms/choice.html.

Figure 4: Number of vouchers used and limit on number of vouchers allowed, 1990–2004



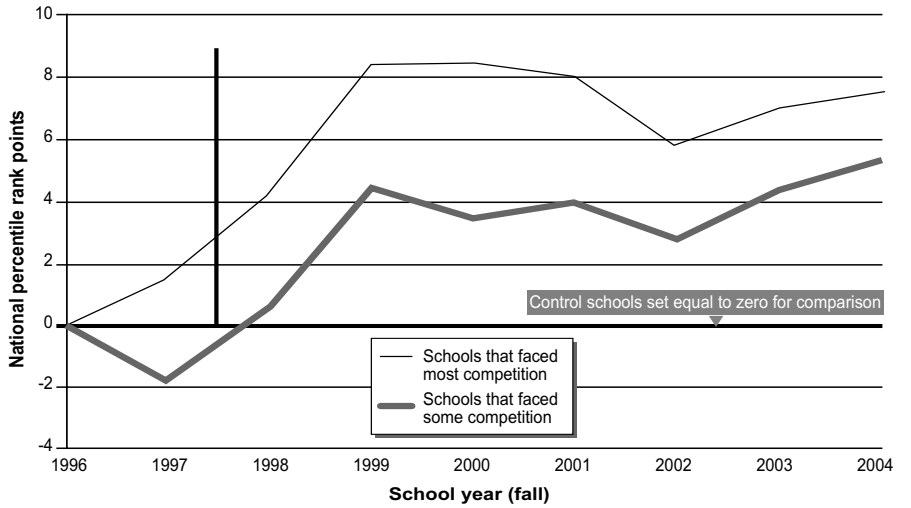
Source: Author's calculations based on numbers derived from Milwaukee Parental Choice Program (MPCP), MPCP Facts and Figures 1998–99 to 2004–05; MPCP Program History (electronic spreadsheet); and the Milwaukee Public Schools enrolment and finance files (electronic spreadsheets).

Nevertheless, a student could count on getting a voucher if they requested one and had a very good chance of getting a place at a private school if they applied. What is more, voucher eligible students were concentrated in about a third of Milwaukee schools where at least two-thirds of students were eligible and could have taken a voucher and left. Indeed, there were some Milwaukee public schools where more than 95 percent of students were eligible and could have left. In the remaining two-thirds of Milwaukee public schools, only about 30 percent of students were eligible for vouchers.

You can see that by 2004, the supply of private schools had caught up with the demand, and the programme had reached the new cap. This, in combination with the dwindling voucher amount, has moved the programme away from fulfilling the essentials for school choice. In short, before 1997, the programme did not have the essential elements for school choice; for a brief period from 1998 to about 2001, it did have these essential elements; from about 2001 to 2004, it was losing those essential elements again and does not have them now (in particular, there is no supply flexibility).

This would lead us to expect that, if general equilibrium improvements in education were to occur in Milwaukee, they would have occurred in the

Figure 5: Effects of voucher competition on Milwaukee public schools' mathematics scores, 1996–2004



Source: Tables from Hoxby, Caroline (2003) 'School Choice and School Competition: Evidence from the United States', *Swedish Economic Policy Review* 10, p 32, updated using data from the Milwaukee Public Schools test results files (electronic spreadsheets).

period around 1998 to 2001. That is precisely what one finds. I am drawing now from my work on Milwaukee, which I have updated for this paper.[7]

As shown in Figure 5 and 6, students at schools that faced some competition made significant gains relative to comparison schools (those facing no competition) in the years immediately following the 1997 expansion of the voucher programme in Milwaukee. The gains achieved over those years were maintained over subsequent years.

Another researcher, Raji Chakrabarti from the Program on Education Policy and Governance at Harvard University, has also studied the Milwaukee situation with updated data and come to the same conclusions.[8]

How does this discussion of money following students reflect on New Zealand? My understanding is that state-integrated schools are funded at

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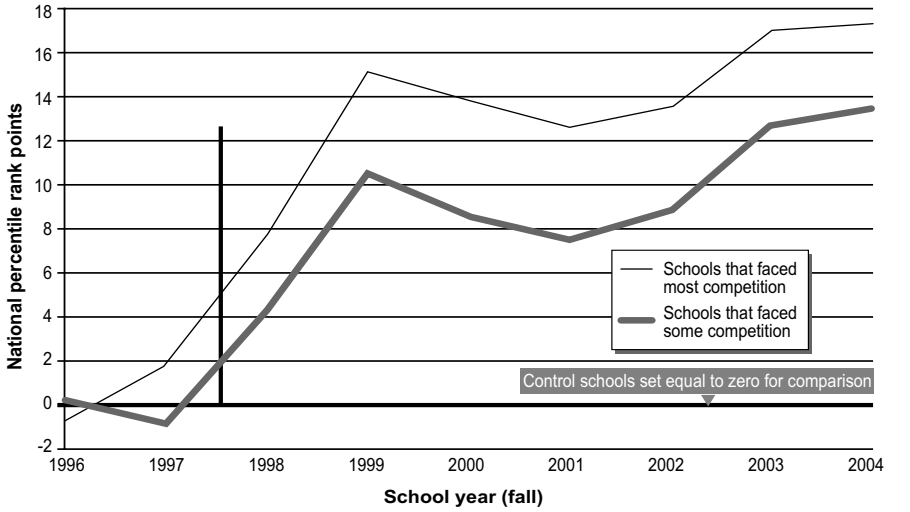
7 See Hoxby, Caroline (2003a) 'School Choice and School Competition: Evidence from the United States', *Swedish Economic Policy Review* 10, p 32 and Hoxby, Caroline M (2003b) 'School Choice and School Productivity (or Could School Choice be a Tide that Lifts All Boats?)' in Caroline M Hoxby (ed) *The Economics of School Choice*, University of Chicago Press, pp 287–341.

8 Chakrabarti, Rajashri (2005) *Can Increasing Private School Participation and Monetary Loss in a Voucher Program Affect Public School Performance? Evidence from Milwaukee*, Working Paper, Harvard University, Cambridge, p 40.

Figure 6: Effects of voucher competition on Milwaukee public schools' science scores, 1996–2004



Source: Tables from Hoxby, Caroline (2003) 'School Choice and School Competition: Evidence from the United States', *Swedish Economic Policy Review* 10, p 32, updated using data from the Milwaukee Public Schools test results files (electronic spreadsheets).

around 100 percent parity with the regular state schools but that they have only limited elasticity of supply because they are constrained in the extent to which they can enrol students who do not share their special character. My understanding is that independent schools receive funding equal to only about 25 percent of what the state schools get. I suspect, though I do not know, that the limited degree to which money follows students into the private sector and the limits on supply flexibility of the state-integrated schools reduce the extent to which these forms of school choice can generate general equilibrium improvements in all schools in New Zealand.

ESSENTIAL ELEMENT 3: INDEPENDENT MANAGEMENT OF SCHOOLS

The third essential element of school choice is that the schools are independently managed. By this, I mean that schools must be able to innovate with regard to pedagogy, staff compensation, the organisation of work, and the allocation of the budget among uses such as technology, personnel, longer school days, longer school years and so on. Most importantly, a school must have sufficient independence of management to continue to provide

competition when other schools would like it to stop. That is, successful management should never be closed down or curtailed because a school is dependent on other schools with which it is supposed to be competing.

I hope that this essential seems obvious, just as I hoped that the two previous essentials did. Yet, many so-called school choice plans so deny independent management to schools that there is little room for innovation and successful schools can be 'reined in' as soon as they become 'too successful' as competitors. Because people are by far the most important input in education, the most important constraint on a school's being independently managed is an inability to make decisions regarding hiring, compensation, assignment to duties, promotion and so on. For instance, if a school has to work within a series of collective bargaining agreements that are highly detailed and rigid, and if the agreements have been negotiated not at the school level but at a much higher level, a school is unlikely to have much management autonomy.

One of the key differences between magnet and charter schools was, recall, that the magnet schools, though more generously funded per pupil, did not enjoy much independence of management, even though they were supposed to innovate. In particular, they inherited a collective bargaining agreement from the Chicago Public Schools. This may be a reason why they do not raise achievement as much as the charter schools, which – I must say – have used their management autonomy to do many innovative things. For instance, among the charter schools we have studied, there are schools that have used technology to test children on a bi-weekly basis and give instant diagnoses of individual students' learning problems. Another charter school has a toll-free number parents can call to hear their child's teacher give an update on what happened that day in class and what homework has been assigned. This same school puts a computer in every child's home that is linked to the school's intranet so that a family can download their child's homework assignment and other school materials, should the student forget to take them home.

To reinforce this point about independent management, let us return briefly to the Milwaukee public schools, which responded so positively to competition when they faced it between 1998 and 2001. The key thing that the principals of the regular public schools that faced serious competition asked for, and eventually obtained, was the relaxation of rigid parts of the Milwaukee collective bargaining agreement. In particular, they wanted the right to assign teachers to classrooms and the right to counsel very problematic teachers out of teaching altogether. The principals also asked for more autonomy in

choosing pedagogy that parents respected and asked for discretion in allocating their budgets. All this suggests that the state schools were unable to compete successfully without independence of management.

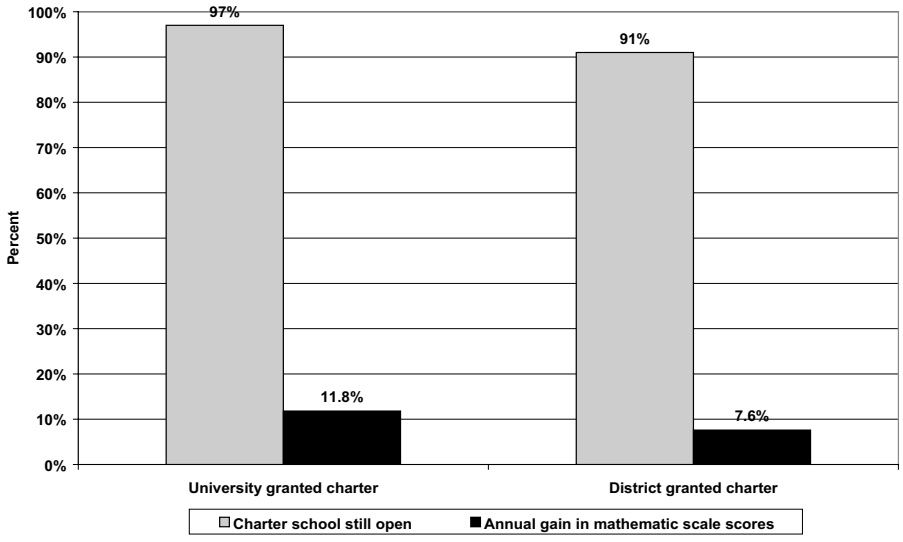
Before moving to what I consider to be the cleanest evidence on the importance of independent management, let me say what independent management is not. Having the right of independent management does not necessarily mean that a school should be able to avoid being assessed, being audited or otherwise participating in uniform systems of accounting. In other words, being allowed to manage one's inputs does not imply being free to not report on one's outcomes. Also, independent management does not mean that every school has to reinvent the wheel. Indeed, in the United States, some of the greatest innovators in pedagogy and school management are education management organisations that operate hundreds of charter schools and state schools under contract to the district school board.

But, I wanted to present some clean evidence on the importance of independent management, and, to do that, I need to compare schools that operate under extremely similar regimes, except that some enjoy more independent management than others. Fortunately, charter schools in Michigan provide us with a nice example because, in this state, charter schools can either be authorised by a university chartering committee, in which case the school has quite independent management, or it can be authorised by the district in which it is located, in which case it can be reined in by the very administration with which it is supposed to compete. In particular, if a school is chartered by its own district in Michigan, it typically shares the district's collective bargaining agreements and therefore cannot manage its own staff with much freedom.

As shown in Figure 7, schools in Michigan that were chartered by a university chartering committee performed better than those that were chartered by the school district. This was true along at least two dimensions: the likelihood that the charter school was still open and the annual gain in mathematics scale scores.

How does this discussion of independent management reflect on New Zealand? My understanding is New Zealand schools have considerable independence in being able to hire their own staff, but that both state and state-integrated schools work under a nation-wide collective bargaining agreement. In addition, my understanding is that all New Zealand schools are bulk-funded for operations, but are centrally resourced (not bulk-funded) for teacher salaries (though bulk-funding became increasingly common in the 1990s, to the point where some 40 percent of students and teachers were

Figure 7: Differences between charter schools based on independence of management, Michigan



Source: Author's calculations using electronic school directory and electronic data on MEAP scores from the State of Michigan Department of Education, http://www.mde.state.mi.us/.

in bulk-funded schools by the late 1990s). Central resourcing – or what I would call line-item funding – tends to reduce a school principal's control over their budget. I suspect, though I do not know, that the limits on the independence of management and budgeting in New Zealand schools constrain school leaders who want to innovate and whose example might generate general equilibrium improvements in education.

PRICING AS A POLICY INSTRUMENT

I would like now to fulfil my earlier promise and return to the point that school choice is fundamentally a claim that the government should rely on prices, not quantity regulation or direct provision, as its instrument when intervening in education. Prices, I have been arguing for some time (starting with a paper entitled *Ideal Vouchers*) are inherently extremely flexible instruments that can be used to address a myriad of concerns.[9] To put it another way, an advanced society like New Zealand has already thought through many social and efficiency

[9] Hoxby, Caroline (2001) *Ideal Vouchers*, Working Paper, Department of Economics, Harvard University, Cambridge.

issues related to schools. These thoughts can be carried over from a system of state provision to a system of school choice *if* one uses prices.

Let me be more concrete. The prices that we set in a school choice scheme should attempt to fulfil a couple of purposes. First, prices should be set to guarantee that the playing field is level for competing suppliers of education. For instance, if a school happens to enrol students who are unusually expensive to educate it should not thereby become incapable of providing competition for schools that have not enrolled expensive-to-educate students. After all, no one benefits if schools that are filled with *in*expensive-to-educate students face no competition. The lack of competition would make it more likely that such schools would rest on their laurels, creating a world in which inexpensive-to-educate students are in comfortable but 'neglected' schools that make themselves as inaccessible as possible to expensive-to-educate students.

Second, prices should be set to encourage families to make individual choices about human capital investment that are optimal. I really mean optimal from society's point of view rather than optimal from a private point of view, but I will come back to that point. Let me be even more concrete and give some examples of price schemes that have or can readily be tried.

Two types of income-sensitive prices should be considered. The first would involve providing subsidies that are explicitly designed to offset differences in the cost of educating different children. Such a system would recognise that poorer children have fewer education-related resources at home (computers, trips to museums and so on), which suggests that there is a differentially high cost for a school to get them to the same outcome as a student with greater home resources. While we sometimes see choice schemes with vouchers that are crudely differentiated by family income (for instance, in Cleveland's voucher programme, the voucher is slightly larger for families that are below, as opposed to near, the poverty line), a fully differentiated subsidy system is rare. The closest example to such a subsidy structure is probably in the city of Seattle in Washington State, where the district superintendent attempts to set capitation subsidies that make all of his schools eager to serve students from an array of family backgrounds.

The evidence on the programme is more anecdotal than we might like, but my understanding is that the superintendent periodically resets the prices when he sees that supply and demand do not appear to be equilibrated. For instance, at one point, the fees of poor students were evidently too advantageous relative to those for higher income students. The superintendent realised this because teachers were flocking to schools located in poor

neighbourhoods and difficult-to-fill vacancies were arising in schools located in more affluent neighbourhoods. Of course, the revealed preferences of students can also be used as evidence (something my colleagues and I discuss at length in a recent paper on higher education rankings).[10]

A second type of income-sensitive price should also be considered but it has a quite different justification. A question in school choice programmes is often whether to allow parents to 'top up' or add to the subsidy that the government gives to a school. On the one hand, top-up fees seem dangerous. They could be used by schools as a method of enforcing income segregation or, perhaps more worrisome, they could lead to the development of a two-tier education system under which the government per-student subsidy provides an inadequate education and affluent parents reveal this by all choosing to top up the subsidy substantially. On the other hand, if we entirely forbid topping up, we lose a valuable source of information. Because affluent families can successfully use internal family financing to solve the missing capital market problem, their investments in education reveal their assessments of what an optimal education investment is. If we do not have this information, the government's investment in education is more likely to become inadequate for everyone.

However, as I have said, we might worry that affluent families could have an incentive to 'overinvest' if a benefit from doing so was income segregation and that was worth something in itself. (Although it is not obvious to me that it is.) Since the goal would then be to choose a price structure that draws information from affluent parents' decisions but discourages the use of top-up fees purely to enforce income segregation, a school choice plan can allow schools to ask parents to top up *if* the school practises need-blind admission and gives need-based scholarships that eliminate top-up fees for poorer families. The scholarships should be funded, in least in part, by the more affluent families' top-up fees. Thus, there is an implicit tax on top-up fees paid by the affluent and the tax rate should reflect the temptation to use top-up fees for income segregation. The greater the temptation, the greater the tax rate needed to offset it.

Before you begin thinking that this price structure is hopelessly complicated, I should mention that it is the implicit contract used by the US

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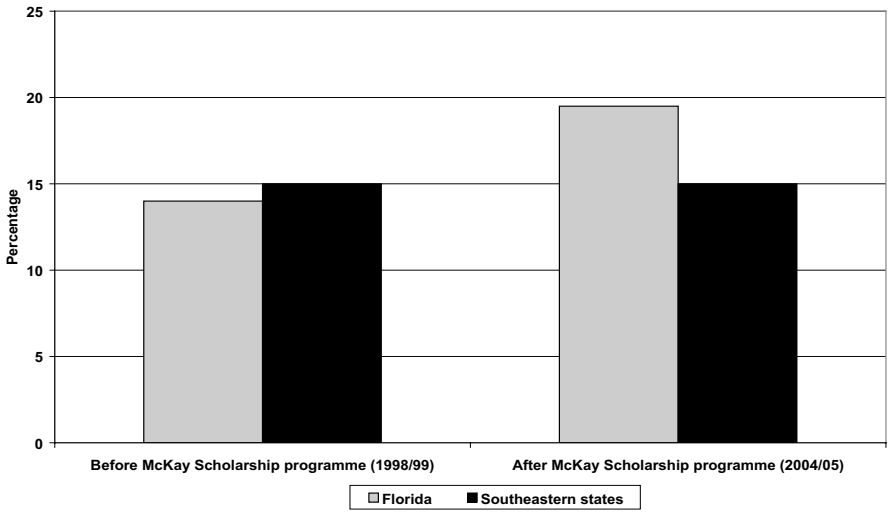
[10] Avery, Christopher *et al* (2004) *A Revealed Preference Ranking of US Colleges and Universities*, NBER Working Paper W10803, Department of Economics, Harvard University, Cambridge.

government to work with its tertiary institutions (where it is quite active). It is also implicitly used in a few US voucher schemes.

Disability-sensitive fees are another way to ensure that a school choice system maintains an even playing field for schools that enrol more and fewer expensive-to-educate students. That is, the fees should be structured such that a school can compete equally well if it does or does not enrol a child with a learning disability or physical disability. My own instinct when first considering such fees was that it would be very hard to get them right. That this instinct was perhaps wrong is shown by Florida's McKay Scholarship programme, which is a voucher programme for which every disabled student in Florida is eligible. There, the voucher amount is simply set equal to whatever the student's regular public school would receive for the student's education: basic funding plus some state and federal aid that is specific to the student's disability. It is probably best to think of those aid amounts as having come from a professional judgement model rather than a market. A Florida McKay voucher can be used by a family to pay a private school's tuition or pay a public school outside their regular attendance zone to enrol their child.

This programme works surprisingly smoothly. It is one of the largest voucher programmes in the United States with about 15,000 students

Figure 8: Percentage of disabled students enrolled in a private school or out of zone school, Florida versus other southeastern states, 1998/99 and 2004/05



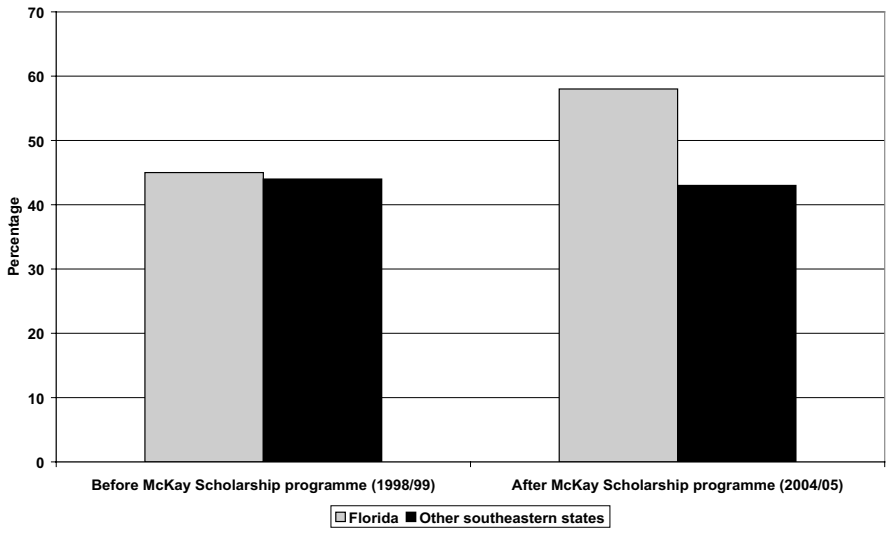
Source: Author's calculations based on microdata from the National Household Education Surveys of 1999 and 2005.

exercising the voucher for which they are eligible. A simple difference-in-differences analysis shows the effects of the programme. Before the McKay Scholarship programme was introduced, Florida's disabled students were no more likely to use private schools or public schools outside their attendance zone than were disabled students in other southeastern states. Indeed, as Figure 8 shows, they were slightly less likely to do so. This changed after the introduction of the McKay Scholarship programme, and we can see that Florida's disabled students are more likely to exercise choice than their counterparts in other southeastern states.

Before the programme, parents of Florida's disabled students were no more likely to express satisfaction with their child's school than parents of disabled students in other southeastern states. As Figure 9 shows, their level of satisfaction is now significantly higher. (The satisfaction reports come from a large, representative national survey.)

Something that surprised me about the McKay Scholarship programme is that the exact choice of the supplemental amounts for the disabilities turned out not to be a vexed question. Indeed, there are even examples of private schools refusing to take the entire voucher because they cannot justify taking all of it unless they raise tuition for their non-disabled students. How can this

Figure 9: Percentage of parents with disabled children who are very satisfied with their school, Florida versus other southeastern states, 1998/99 and 2004/05



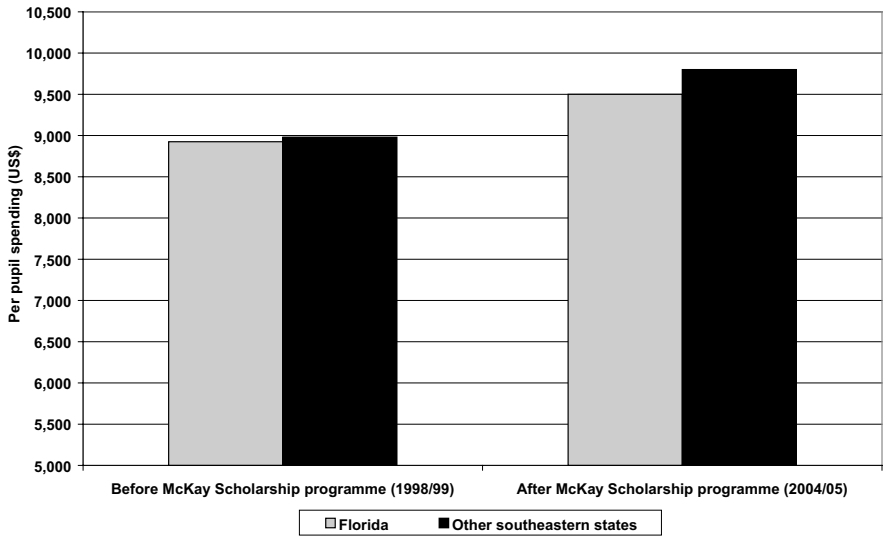
Source: Author's calculations based on microdata from the National Household Education Surveys of 1999 and 2005.

be? Disability is probably the area in school choice that has the greatest potential to generate efficiency gains purely through match quality. Parents often feel that a particular programme is simply the right match for their child's special needs, and it can be less expensive to find that particular programme through choice (that is, choosing a school that *wants* to offer it and is naturally aligned with the parents' belief about what works for their child) than it costs to make a less naturally aligned school create an appropriate environment. Also, while some parents want their disabled child to be placed in a mainstream classroom to the maximum possible extent, others want their disabled child to be in a specialised programme, where schools enjoy economies of scale in delivering special education.

To make this point empirically, Figures 10 and 11 show that Florida's expenditure on disabled children's education has fallen slightly relative to that of its southeastern neighbours, both on a per-disabled-pupil basis and per-pupil-in-the-overall-population basis. This slight reduction in expenditures, combined with the increase in satisfaction, suggests that the programme has generated economies.

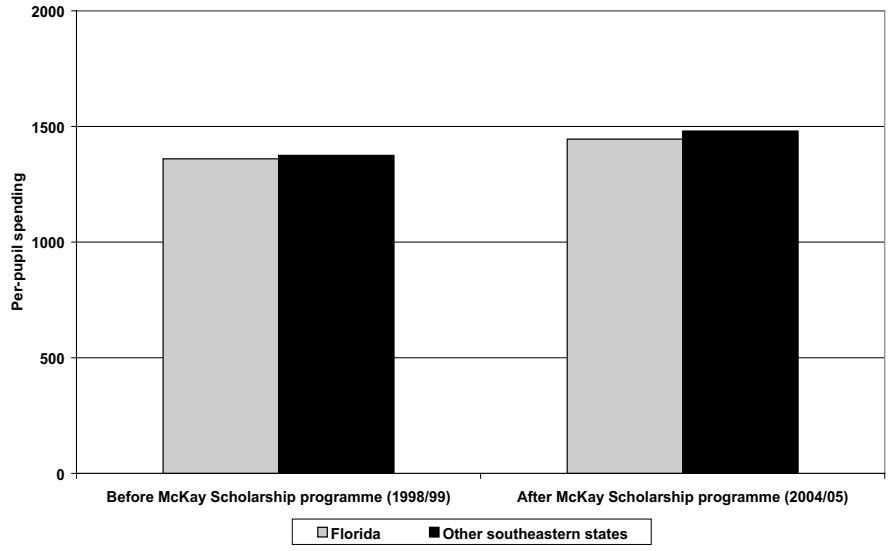
A school choice programme can also include selection-sensitive prices – that is, having a subsidy that is set in proportion to its ability to select students.

Figure 10: Spending per disabled child, Florida versus other southeastern states, 1998/99 and 2004/05



Source: Author's calculations based on electronic data from School Report Cards obtained from state departments of education.

Figure 11: Spending on disabled children per student in the state, Florida versus other southeastern states, 1998/99 and 2004/05



Source: Author's calculations based on electronic data from school report cards obtained from state departments of education.

Such a price structure would be based on two premises: first, it is a mistake to eliminate all forms of selection into schools because there is a cost of eliminating variety; and second, the ability to select students can convey competitive advantages to a school (requiring us to offset those advantages with a reduction in subsidies that keeps the playing field even).

With a subsidy structure that varies with selection, schools' tendency to choose the different models of selection can reveal whether the price structure is, in fact, achieving the goal of a level playing field. If all schools are eager to practise maximum selection at the reduced subsidy, then the reduction in fees associated with the ability to select is too small. If all schools are eager not to practise selection, then the reduction in subsidies is too large. I would be the last person to claim that any country or state has an exemplary system of such a sliding schedule of subsidies, since the states that give varying fees (New Zealand is one, with a reduced subsidy for independent schools) usually do not allow individual schools to switch status easily and thereby reveal information about the subsidy structure. For instance, New Zealand has a subsidy for independent schools that could be viewed as a subsidy reduced for selection. However, New Zealand does not allow its state schools to consider becoming independent schools with reduced subsidies, and it is not at all

obvious that even elite state schools would be ready to switch status. There is some evidence from cities like Milwaukee that selection-sensitive pricing works where voucher and charter school systems co-exist, with the voucher being smaller than the charter schools' subsidy. The voucher schools are able to practise a little more selection than the charter schools can.

In a school choice programme, prices can depend on a school's willingness to participate in universal testing and other audits. A state can, say, give the largest voucher to schools that participate in state-wide testing that includes regular public schools, give a smaller voucher to schools that administer a well-known 'off-the-shelf' test, and give an even smaller voucher to schools that do not administer universal tests. The logic here is that a school that participates in state-wide testing has given the government the greatest ability to monitor its outcomes in comparison with those of government-provided schools. That additional ability to monitor means that the government's money is less likely to be diverted and the government should be willing to provide more money with confidence. There are no perfect examples of such selection-sensitive subsidies in practice, but wherever various voucher and charter school systems co-exist, for example in Washington DC, Chile, Milwaukee and Florida, this is one reason why they do.

A final price refinement that I will mention, because it is especially relevant to countries like New Zealand, is curriculum-sensitive pricing for those who live in areas with low population density. Students who live in such areas are likely to suffer from inoptimally low human capital investments if they have the ability to master unusually difficult curricula. The problem is fundamentally that any school that kept that distance reasonable would be too small to offer specialised or advanced curricula. Providing rural students with advanced learning opportunities can be more expensive than a 'plain' education if an advanced student needs to purchase specialised online curricula and be taught, in part, by visiting teachers who have advanced skills. This suggests that society may wish to give a voucher or school fee that rises with projected costs when a rural student demonstrates their ability to master advanced curricula. The subsidy would actually be used to compensate curriculum providers, a visiting teacher and the local school for certain services that it continues to provide.

In all of the price refinements I have described, I have been attempting to do the same thing, over and over. That is, I look for the service or benefit that is unpriced or mispriced, examine the structure of that mispricing, and design a school subsidy that uses that structure to counteract the mispricing. Put

another way, the subsidies are always designed to internalise externalities and market failures that produce an externality-like scenario. The beauty of relying on prices as one's instrument is that they are inherently flexible. While getting the exact prices right is hard, getting the structure approximately right can be reasonably straightforward and the actors' revealed preferences often give us information to adjust prices in the right direction.

You will observe that we are now drawing quite heavily on economics, both for understanding the structure of externalities and for devising prices that counteract mispricing. I really have not yet scratched the surface of the refinements that economic work in mechanism design, matching models and computable general equilibrium suggest can be implemented.

CONCLUSION

This returns me to where I started: the struggle to keep economics in the discussion of school choice. As economists, we are privileged to be able to draw greatly on our field – that is, on advances in economics – to understand the fundamental sources of general equilibrium improvements that are possible with school choice and to understand the refinements we can introduce to ensure those improvements take place. I say, let us, as economists, make it our duty to keep economics front and centre in the discussion.

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