Institution: University of Kent

Unit of Assessment: 18 – Economics and Econometrics

Title of case study: Improving the Economic Role of State Education in Britain: Lessons from the Independent Education Sector

1. Summary of the impact (indicative maximum 100 words)

The research described in this case study has had a significant impact on the policy debate on the economic role of independent schools in Britain and what might be learned to improve policy in state education. Moreover, the research has informed the government's approach to funding the teaching of STEM subjects and has led to better public awareness and understanding of the issues.

The findings have provided policy-makers in education and government economists with a better knowledge base with which to consider and evaluate the role of the independent education sector in Britain and to contribute to the debate on skills, social mobility and inter-generational transfer through educational outcomes. A better understanding of academic privilege is part of the key to understanding social disadvantage. The reach of the impact is mainly in England, and its significance is in encouraging the improvement of educational outcomes in state schools, which can change lives for the better.

2. Underpinning research (indicative maximum 500 words)

The research was carried out between 2006 and 2011 by **Yu Zhu (Kent), Francis Green (Kent) Stephen Machin (UCL) and Richard Murphy (UCL)**. It was the first major quantitative research of the economic role of independent schools in England to use large micro data sets. The project involved secondary analyses of several large survey data sets in order to examine the economic effects of independent schools over time (reference 4).

Independent schools employ an increasingly disproportionate share of teachers in Britain, relative to the number of their pupils. Their teachers are more likely than state school teachers to possess post-graduate qualifications, and to be specialists in shortage subjects. Recruitment from the state sector is an important and growing source of new teaching staff for independent schools, and represents a small though increasing deduction from the supply of new teachers available to state schools. Independent school teachers enjoy greater job satisfaction, work with fewer pupils, enjoy longer holidays and, in the case of women, shorter weekly hours. Among women, pay is lower in the independent sector. For men, there is no significant inter-sectoral difference in pay. However, for both men and women there is evidence of a substantial pay premium for independent school teachers trained in shortage subjects (references 1, 4).

The researchers firstly examined trends in the economic return to attendance at an independent school over recent decades both for males and females. They estimated both the labour market return, and the impact on the academic achievement of pupils. They also examined whether the labour market return had become more associated with academic achievement than in earlier decades (references 2, 3). Secondly they examined the role of independent schools in the labour market for teachers. They investigated differences in labour market outcomes (wages, hours, holidays, job satisfaction) for independent and state school teachers, how these differences may have changed over time, and how the differences may be associated with transitions between the state and independent sectors (reference 1). Thirdly they provided evidence showing that independent schools deliver key skills and academic success, especially in STEM subjects (science, technology, engineering and mathematics), that are most in demand in the modern economy: the independent/state school wage differential of teachers has risen significantly over time, and a significant factor has been faster rising educational attainment for independently-educated individuals (references 2, 3).

The project started in 2006 and was undertaken by Yu Zhu (Kent), Francis Green (Kent until 2010), Stephen Machin (UCL) with research assistance from Richard Murphy (funded by the project, and based at UCL). Murphy worked on preparing and merging datasets and the empirical analysis was carried out by Zhu and Murphy in discussion with Green and Machin. The writing up was a joint effort.

3. References to the research (indicative maximum of six references)

Outputs

1. Green, F., Machin, S., Murphy, R. and Y. Zhu (2008) Competition for Private and State School Teachers. *Journal of Education and Work* 21 (5), pp. 383-404. http://dx.doi.org/10.1080/13639080802580336

2. Green, F., Machin, S., Murphy, R. and Y. Zhu (2009) What Have Private Schools Done for (Some of) Us? *Significance* 6 (2), 63-67, Royal Statistical Society. DOI: 10.1111/j.1740-9713.2009.00351.x.

3. Green, F., Machin, S., Murphy, R. and Y. Zhu, (2012) The Changing Advantage from Private Schools, *Economica* 79, 658-679, DOI: 10.1111/j.1468-0335.2011.00908.x

Funding that underpinned the research

4. This project was initiated and funded by a £64k grant by the Nuffield Foundation (OPD/32404), Jan 2006 – Sept 2007.

Project webpage: http://www.nuffieldfoundation.org/economic-role-independent-schools-britain

4. Details of the impact (indicative maximum 750 words)

As described below, the impact of the research has been to a) inform policy debate on the economic role of independent schools and discussion of social mobility within the state education sector; b) to shape government policy towards funding for the teaching of shortage subjects; and c) to improve public awareness and understanding of the issues.

The research has **informed debate amongst practitioners and the education and economic policy community**. A clear finding of the research is that there are significant differences in pay and working conditions of teachers in shortage, STEM subjects between the state and the independent sector and that these differences contribute to the superior student performance in those subjects in the latter sector.

This finding on STEM subjects was communicated direct to government when the researchers were invited to give **evidence to the House of Commons Select Committee on Children, Schools and Families** on school provision (source 1).

The research was **cited by the Royal Society in its "State of the Nation" reports** (source 2) on 'The UK's Science and Mathematics Teaching Workforce' and 'Science and Mathematics Education for 14-19 year olds' in 2008 and 2010 respectively:

Royal Society 2008, State of the Nation - Science and Mathematics Education 14-19:

> "Indeed, owing to the fact that the data are not easily accessible, it has often been conjectured that a key factor in the high performance in triple science is that it is taught mainly in independent and selective schools, which have historically been better resourced to undertake teaching of the separate sciences. Furthermore, as a recent research study based on the quarterly Labour Force Survey showed, there are higher numbers of specialist teachers in

science and mathematics in the private sector (Green *et al*. 2008)." (p. 43)

The potential policy implications of the Royal Society reports, informed by the research, are clear. The government should tackle the under-supply of teachers in shortage subjects in state schools by offering better pay and working conditions to graduates in STEM subjects. In order to address declining social mobility, the government should also devote more resources to enable the academically best-performing schools and/or the most able pupils in the state sector to compete with their independent sector counterparts for places at leading universities and popular subjects, perhaps through early identification, provision of extracurricular activities and career guidance.

The **Government responded to this debate in learned societies, parliament and the media, informed by this research, and has placed the teaching of STEM subjects as a national priority**. For example, George Osborne boosted the government's commitment to the teaching of STEM subjects in the 2011 Autumn Statement with a pledge of **£600 million to create schools dedicated to STEM subjects** (source 3). In this way the research facilitated non-academic research users and policy makers to create impact in changing policy towards the teaching of STEM subjects.

Finally, the research has had a far-reaching impact on **improving public awareness and understanding** via the widespread media coverage in the mainstream press concerning the economic role of independent schools and potential impacts on social mobility (source 4).

5. Sources to corroborate the impact (indicative maximum of 10 references)

1) **House of Commons Select Committee** (on Children, Schools and Families) hearing on "Diversity of School Provision: Links between Independent and Maintained Schools", Wednesday 7 May 2008, evidence presented by Professor Francis Green. Memorandum: http://www.publications.parliament.uk/pa/cm200809/cmselect/cmchilsch/432/8050702.htm

2) In addition to being cited by **"State of the Nation"** reports on the Science and Mathematics Teaching Workforce and the Science and Mathematics Education for 14-19 year olds by the **Royal Society** in 2008 and 2010 respectively, Yu Zhu was also mentioned in the acknowledgement for contribution to the preparation of the former report. http://royalsociety.org/education/policy/state-of-nation/. An earlier report also cited the research, and was the starting point for the State of the Nation project on the teaching of STEM subjects, and its critical role in enhancing educational outcomes and future opportunities.

3) **Autumn Statement 2011,** http://webarchive.nationalarchives.gov.uk/20130129110402/http://www.hm-treasury.gov.uk/as2011_documents.htm - the Executive Summary, or page 36 in the full report. This statement does not provide links to underpinning research on education policy, though sources 1 and 2 are indicative of the public debate impact which would have reached the desks of policymakers from the Royal Society, House of Commons Select Committee and media publicity.

4) Media coverage:

The Economist

- Feb 28, 2008, "Private Education, Is It Worth It?"

"Private education is a consumption good, not just an investment. Long gone are the days of spartan dormitories and cold showers—kids in the private sector now have fabulous science labs and sports facilities, and access to a huge range of subjects and activities. The researchers also managed to pinpoint the way private schools work their magic: through better exam results, rather than through networking opportunities or better teaching of soft skills, such as etiquette or leadership. Once they compared state- and private-school leavers with identical qualifications, the earnings premium disappeared. "In the past few decades, private schools have transformed

themselves into highly effective exam-passing machines," says Francis Green. They hire better-qualified teachers, and more of them, offering higher salaries to lure those with qualifications in difficult subjects such as physics, mathematics and foreign languages, and now have twice as many teachers per pupil as state schools do."

The Guardian

- Jan 11, 2008, "Private schools still reproduce inequalities"

'Francis Green, a co-author of the research and professor of economics at the University of Kent, said: "Our findings imply that the rising importance of independent schools needs to be given more serious attention by educational policy-makers - not just as a model for the improvement of state schools but as a significant player in the market for scarce teaching resources. Continuing shortages in maths and science departments are of particular concern, and here the impact of the independent sector appears even stronger." The two studies, Competition for Private and State School Teachers, and The Changing Economic Returns to Private Education, are due to be presented at a Nuffield Foundation seminar in Oxford today.'

The BBC News Online

- May 12, 2008, "Return of Education's 'Cold War'"

"Most independent schools do a good job. Some are exceptional. But they have huge advantages that are denied to most state schools, which quite rightly have to accept pupils of all types, abilities and family backgrounds. State schools cannot admit only the motivated, or the affluent, or the bright. They cannot set their own income levels. As Professor Francis Green, from Kent University, told the select committee the evidence is clear - the academic success of the independent schools is mainly down to the simple fact they have superior resources."

The Financial Times

- Mar 08, 2008, "FT'S TOP 1000 SCHOOLS 2008: Class action that gets results"

Named Individual - Patrick Watt, Skills Development Scotland.